System Maintenance Aid

Version 1.3.1

This document applies to System Maintenance Aid Version 1.3.1 and to all subsequent releases. Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

Table of Contents

Release Notes for SMA Version 1.3.1

Prerequisites

- Natural Version 2.3.4 or above
- Adabas Version 6.2.3 or above

Documentation

The available documentation has been updated.

Installation

The installation procedure has not changed. It is not necessary to perform a special migration step to migrate from SMA Version 1.2. to SMA Version 1.3.1.Only the help text has been updated and needs to be loaded.

Enhancements and Features

This section covers the following topics:

- Maintaining SMA Parameters
- JCL Generation
- Report Function
- Administration
- Miscellaneous

Maintaining SMA Parameters

Active Parameters

The SMA system file contains a variety of parameter definitions. Until now they could not easily be maintained. It is now possible to obtain an overview of all the parameters used in an environment. SMA sets an internal flag for parameters which were used by the JCL generator during a JCL generation for an environment. These parameters are called "active parameters". Every environment has its own set of active parameters.

Parameters must be maintained in their environment, this is limited to the active parameters. It is still possible, however, to also maintain the others.

To reset the active flag of one particular parameter, use the line command SI "Set Inactive" in the Parameter Selection screen. To reset the active flag of all parameters in one specified environment, use the direct command SET-INACTIVE <environment-name>.

Transfer Values to other Environments

To transfer values from the default environment to other environments, use the line command TV "Transfer Value". The value specified will be set in all other environments under the same operating system.

Set Default Value

To change a value to the value specified in the default environment, use the line command SD "Set Default".

Direct Command Save

The command Save in the Parameter Selection menu saves all changes directly into the SMA system file.

JCL Generation

It is possible to switch to the Modify Parameter menu during the online checking phase if a condition is not met. The JCL generator automatically restarts after all necessary updates have been made.

In batch, all parameters used and their values are printed in a report (0). This list is not sorted.

The name of the skeleton used in the job step is stored in the job "Report".

Report Function

The report function lists:

- the values of specified parameters in all environments. They are sorted by value, environment and date of last use.
  Use the direct command `REPort VALue <parameter><parameter-group>`.
- the active parameters in specified environments.

Administration

The following features are available:

- Delete unused LIB-GROUP using the SMA loader card;
- Delete unused LIB-GROUP online;
- For maintaining saved jobs:
  The line command RN "Rename Job" allows you to rename a job ID and to move a job into another job group.
  The line command TE "Text Description" allows you to maintain job descriptions.

Miscellaneous

In batch mode, line commands can now be up to 80 bytes long. Use the character **%** as a continuation character. This allows you to split a command into several lines. All characters following the % sign will be ignored and % will be set to blank in the command string.

The recursion depth during parameter validation has been extended to 16.

Maintenance End Version 1.2.4.

Support for SMA Version 1.2.4 ends on December 31, 2002.

Concepts of System Maintenance Aid

This section covers the following topics:

- Purpose of Software AG System Maintenance Aid
- Goals of System Maintenance Aid
- Environment
- Products and Product Installations
- Installation Control Tables
- JCL Generation
- Library Concept Used by SMA
- JCL Generation in Different Operating Systems

Purpose of Software AG System Maintenance Aid

Software AG supplies a large and ever-increasing number of products, and these products are constantly being enhanced. This productivity results in a steady flow of new products, new product versions and product corrections to Software AG customers.

These new products and product versions are sent to customers on "System Maintenance Tapes".

Each time a customer receives a "System Maintenance Tape", the system administrator must do the following:

- Evaluate the contents of the tape and determine the priorities for the installation of the new versions
- Install one or several new versions for different tests
- Install one or several new versions for production.

Normally, this cycle extends over a period of time, and usually the installation steps are repeated for test and production. This type of work is not only required when "System Maintenance Tapes" are to be processed. It also arises when:

- a new product has been ordered from Software AG and has to be integrated with other Software AG products;
- product corrections have been received from Software AG which must be applied for test and for production.

Software AG’s System Maintenance Aid is designed to support this type of work for an increasing number of products which are usable in different operating environments.

SMA also supports the installation of Software AG products with new Software AG customers. SMA is the tool for the customer’s system administrator as well as Software AG’s customer support personnel.

Goals of System Maintenance Aid

System Maintenance Aid is designed to meet the following requirements:

- A uniform mechanism for the product installation and maintenance activities for all Software AG products in all customer environments.
- A high degree of flexibility: Each new product or version arriving at a customer’s site can be incorporated easily into the customer’s SMA installation.
- An open system: The Software AG product delivery files remain normal files of the respective operating system, the installation operations are not performed by SMA directly, and the generated JCL can be viewed and modified by the customer if the need arises.
- Extensive reporting facilities:
  - Descriptions of product installations: SMA prints out all its "knowledge" about how products are to be installed.
  - Documentation of the existing installation: What versions of which products have been installed under what names; what are the library names used; when was this done; etc.

Environment

The central subject within the concepts of SMA is the environment.

Most users of Adabas and Natural will operate several databases or several Naturals. This is necessary to separate different requirements imposed upon an installed Adabas/Natural system. The most important requirements are:

- The system administrator has to test and inspect new products, new product versions and new installation options.
- Application developers need test data as well as test and development versions of application programs in parallel to production versions.
- Users need reliable and stable application programs and system installations.

Each group of requirements should be serviced by a different environment.

Typically, a commercial computer system has environments for the following purposes:

- Production
- Application development
- System test

Note that there are many different ways of establishing a test and a production environment with Adabas and Natural. Usually, there is one database per environment, each with one Natural system file, but it is also possible to have several system files within one database. These would also be considered to be distinct environments.

It is also possible to use the same database with the same Natural system files from different TP-systems (e.g., TSO and CICS). These are considered to be one environment.

An SMA environment is, thus, represented by a Natural system file. Each environment has a number of products installed in it.

SMA allows the creation of any number of environments. All information entered by the user describing the installed products and operating environment are stored within SMA in specific environments. Therefore, products are always installed within a selected environment.

Products and Product Installations

A product delivered by Software AG consists of a sequence of datasets on tape and documentation.

There are the following types of datasets:

- Libraries with members containing Assembler source
- Libraries with members containing object code
- Libraries with members containing load modules
- Input data for loading or updating Natural applications
- Input data for defining and loading database files.

An SMA tape is a product delivery tape sent by Software AG to the customer. It contains the Software AG product datasets which are "normal" files of the corresponding operating system. The first dataset on the tape describes the contents of the tape and how it can be handled.

Installation Operations

An installation consists of a sequence of operations using these datasets and of changes or entries in other software systems.

There are the following operations using the product datasets:

- Allocation / cataloging of datasets
- Copying datasets or members of libraries
- Updating source members, either manually or by "merging"
- Assembly of source members to produce object members
- Linking object members to produce executable modules
- Invoking Software AG utilities (INPL, ADALOD, etc.)
- Special functions like CICS precompiler
- Changing the contents of executable modules at specified addresses (ZAPs).

This list of functions represents nearly all operations which occur during product installation, but this list is neither fixed nor predefined.

New versions or releases of Software AG products usually require a re-installation of the product. Error corrections are supplied as modifications.

A modification can be any of the following:

- Changes in executable members (ZAPs)
- Replacement of an executable member
- Replacement of a source member
- Updates as input for the Natural INPL utility

Installation Control Tables

SMA consists of programs and data:

- All information on products, their installation and their maintenance is contained in database tables and control data.
- The SMA programs consist of facilities for input and update of these control tables and of generators which use these tables to produce commands for the operating systems.

The most important tables are described in the following sections:

- Product Installation Table
- JCL Skeletons Table
- Environment Description Tables

Product Installation Table

An analysis of the installation of a product under different operating systems shows that the basic process is very similar in all systems. For example, installation of Adabas can be described in the following terms:

- reserve disk space;
- load the program library;
- format the database;
- define the database;
- start the nucleus.

For each product, such a sequence of actions is represented by a sequence of entries in the "Product Installation Table". Each entry in this table consists of:

- the name of a function (COPY, ASSEM, LINK, etc.);
- the "parameters" of this function (e.g., which datasets are to be copied).

Each of these entries represents a single step or invocation of a program.

JCL Skeletons Table

For each function in each operating system, there is a "skeleton" containing the command statements for the operating system to call and execute this function. Such a skeleton consists of JCL lines containing formal parameters, and is identified by a function name and the name of the operating system.

The following example shows a possible skeleton for link-edit under an IBM/OS operating system. The formal parameters are enclosed between pairs of number signs (#).

```
//S0001 EXEC PGM=IEWL,
// PARM='LIST,LET,NCAL,REUSE,RENT'
//SYSUT1 DD UNIT=#V-TEMPUNIT#,
//       DISP=(NEW,DELETE,DELETE),
//       SPACE=(TRK,(#V-TEMPSPACE#,10))
//IN1    DD DSN=#D-DSN-DISK(NAT234.LOAD)#,
//       DISP=SHR
//SYSLIN DD DDNAME=SYSIN
//SYSIN DD *
```

Environment Description Tables

Additional information is required to expand the data of the Product Installation Table to an executable command sequence and to select the correct JCL skeleton. This information is not product-specific, but customer- and installation-specific. Therefore, tables describing the customer site and environment are required.

Each Environment Description Table contains the following information for one environment:

- products installed in the environment;
- the specific parameter values which have to be inserted in the JCL skeletons during JCL generation.

JCL Generation

The following topics are covered below:

- Creating Executable Control Statements
- Interrelationship between Products

Creating Executable Control Statements

The process of JCL generation is as follows:

- The user marks the products to be installed.
- SMA works through the Product Installation Table of these products,
- takes the JCL skeletons as indicated in the entries of the Product Installation Table,
- and replaces the parameters in the skeletons with parameter values taken from the user's environment description.

The JCL steps are not necessarily generated in the order of products, but in the order given by the names of the jobs and steps in the Product Installation Table. Therefore, the jobs will contain groups of similar functions, for example, all database load operations or all assemblies.

Interrelationship between Products

Certain Software AG products require other products as prerequisites, for example, Predict requires Natural. These dependencies are checked within SMA.

In addition, there are dependencies in the installation processes of different products. These dependencies occur in two situations:

- Assembly and Link: A module is assembled as part of the installation of one product (e.g., Natural CICS Interface), and the resulting object module must be included in the link-edit operation of a second product (e.g., Natural).
- Parameter Modules: One product (e.g., Con-nect) requires certain parameter settings in source modules of other products (e.g., Natural).

These relationships are treated in the following way: The lines in the JCL skeletons contain conditions which are based on the products installed, on batch or online execution, or on the values of parameters.

By applying these conditions, it is possible to include or exclude statements in the parameter modules or in linkage-editor input.

Library Concept Used by SMA

The following topics are covered below:

- Requirements for a Library Concept
- Installation Libraries
- Library Groups
- Installation and Maintenance Operations

Requirements for a Library Concept

The JCL generated by SMA assumes datasets and libraries to be used in a certain way. This usage must be based on a sound library concept. Some requirements for a good library concept are:

- The exact version and status of an executable member and of all members which have been used to create the executable member must be traceable.
- No action concerning one version of a product (e.g., copy from tape to disk, or link-edit) is allowed to affect another version.
- It must be possible to work on different versions of a product concurrently.
- Customer-specific modules must not be overwritten when new product datasets are loaded.
- Job control statements supplied by the user must not contain version-dependent names of libraries or modules.

The following conventions implement the above requirements. As far as possible, these rules are independent of the operating system.

Installation Libraries

The datasets used for installation at the customer site must be organized in the same way as the delivery libraries of Software AG, i.e., there are load and source libraries for each version of each Software AG product.

In addition, there are work libraries containing the following objects:

- SMA.LOAD:
  All results of the link-steps producing executable modules ("phases") and of assembly/link-steps of those source programs which have been adapted per environment.
- SMA.SOURCE:
  Source members generated by SMA.

You can specify the library names using the following parameters:

OS/MVS	DSN-SMALOAD DSN-SMASRCE
VSE/SP	USRLIB
BS2000	JOBLIB

The work libraries exist once per environment, whereas the installation libraries exist once or several times per system (see Library Groups below).

Library Groups

The installation libraries are changed by the installation process, and also by corrective actions. A good library concept must allow for applying such changes selectively for different environments; one reason being the test of corrections. SMA does not require a separate copy of each library for each environment, because the resulting number of library copies might be considered unacceptable.

This is achieved by the concept of "Library groups". Library groups provide the user with the flexibility to adapt the library concept to individual requirements.

There is always one default library group, the "delivery group". This library group is specified in the default environment, and it is used to keep track of the delivery files. The default name of the delivery group is SAGLIB.

The user has the following options for introducing additional library groups:

Only One Group

In situations where there is little disk space, or when minor control of the status of the libraries is required, the same library group may be used in the default environment and in all installation environments.

In this setup, the user must carefully control the sequence of maintenance and installation actions.

One Group for Test and One for Production

One library group is used in the installation environments for test and development, and one in the production environment(s). This is the recommended setup.

One Group for each Environment

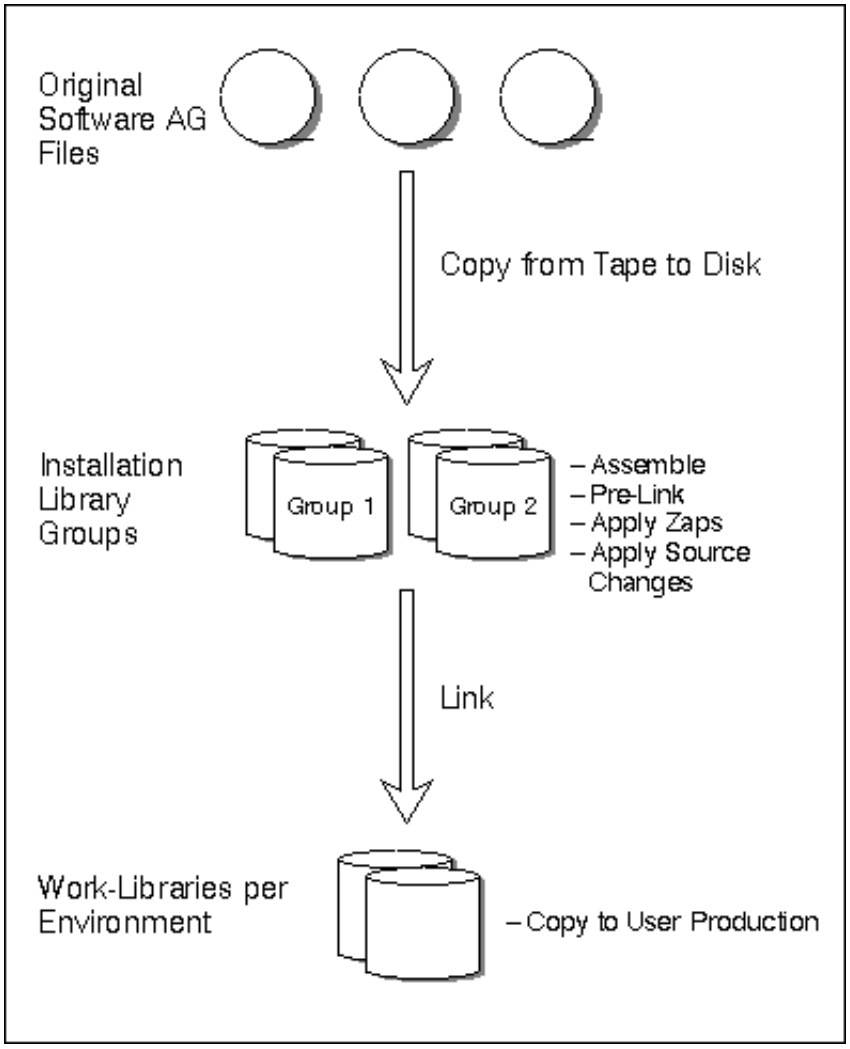
Using a different library group for each environment results in independent environments, and provides the user with maximum control. The disadvantage of this method is the need for creating a possibly large number of installation libraries, depending on the number of environments and different Software AG products the customer is using.

You can specify the library names using the following parameters:

OS/MVS	LIB-GROUP
VSE/SP	LIB-GROUP
BS2000	LIB-GROUP

Installation and Maintenance Operations

Installation and maintenance operations of Software AG products use these libraries. The figure below demonstrates the library concept, and operations on it.



Copying Libraries from Tape to Disk

In the tape management part of SMA, the user may select tape datasets to be copied to disk.

Whenever JCL generation for product installation is requested by the user, all library datasets will be checked to determine whether they are already on disk for the group which is used in the chosen environment. If not, the appropriate copy steps are generated to be executed before the installation steps.

Assemblies and Prelinks

Assemblies take their input from one of the source libraries of the installation pool. The results of these assemblies are stored in the environment workload library.

Linking Executable Modules

The link steps which produce the executable modules place their results in the environment work load library. The names of the executable members contain the version number (e.g., NCI216T1).

ZAPs and Source Changes

ZAPs and source changes are applied to the members in the group installation libraries. SMA keeps track of all ZAP applications, and "knows" which executable modules in which environments must be relinked after any component member has been changed.

JCL Generation in Different Operating Systems

Most of SMA’s concepts are valid for all operating systems under which SMA can be used. The following sections describe some SMA concepts which are specific for the different operating systems. This applies in particular to executing the JCL generator and storing the generated JCL.

- BS2000
- OS/MVS and VSE/SP

BS2000

The "JCL" generated for BS2000 consists of the following parts:

- Environment-specific procedures are generated for common tasks, like loading an Adabas file, assembling and linking, etc. These procedures are generated according to the parameters given for a specific environment (and thus belonging to this environment), but they are used in the installation jobs with different parameters.
- Most of the installation jobs consist solely of calls to these procedures.
  The user may apply these procedures also in tasks other than the SMA-generated installation jobs.
  The procedures and jobs are stored in an LMS library or as separate files as desired by the user.

- Source datasets for different purposes are also created.

Main Topics

The following topics should be considered:

- JCL is separated into jobs, "central" procedures and data files.
- Installation from disk and from tape.
- LMS: LMS is required for delivery libraries as well as for installation JCL libraries and job output libraries.
- Library separation: Delivered libraries and libraries used during the installation are separated. Modules which are created during installation are not located within the delivery libraries.
- Spin-off routine: all jobs stop immediately if an error occurs. All jobs have controlled normal end (normend) and abnormal end (abend) exits. All jobs and all job steps write an oneline message about their normend/abend to the file L.REPORT.
- Restart routine: If an installation job ended abnormally or was canceled, it can be restarted. The job will then start processing with the interrupted job step. (Job variables are used for this feature.)
- Automated Installation: A control job is generated which can be used to start and control all installation jobs generated.

Additional Information

- All members in JOBLIB have information headers.
- The skeleton #READ-ME.... contains special installation information concerning the product.
- Also refer to:
  #NEWS-FOR.SMA
  #READ-ME.SMA
  #READ-ME.@IS
  #READ-ME.@SD

OS/MVS and VSE/SP

OS or VSE users may call the SMA JCL generator either in batch or within the SMA dialog. Both methods have their specific advantages:

- JCL generation in dialog is the method SMA has been designed for: Jobs are created according to the specifications given by the user, submitted from within the SMA dialog and deleted after successful execution.
- The user may save generated jobs within SMA, and may unload stored jobs via batch execution of the UNLOAD JOBS command of SMA.
- When called in batch, the SMA JCL generator writes the JCL generated into its system file as well as into a work file 2. The work file contains separators in IEBUPDTE or LIBR format between the different jobs to allow for loading this output into libraries. See the job JCLGEN from the SMAnnn.SRCE library as an example.
- The generated jobs are created using the same set of job names with each JCL generation. Users who wish to keep generated jobs must use a JCL library and a naming convention for their own jobs.

Menus and Line Commands

The following topics describe all available menus, and the valid selections or line commands for each menu:

- Screens
- Main Menu
- Archived Tapes
- Environment Maintenance
- Working With Generated Jobs
- Library Corrections
- Display Jobs
- Reports
- Administration

Screens

Most System Maintenance Aid screens have one of the following two forms:

- Function menus present a selection list of possible functions. The user selects the function by entering the appropriate letter in the command line at the bottom of the screen.
- Object menus present a list of objects (e.g., available tapes, datasets on a tape). The user selects one of these objects **and** the function to be performed for this object by entering a "line command" next to the selected object. The list of possible line commands is displayed; the first two characters must be entered to issue the selected command.

Main Menu

The Main Menu provides the following functions.

Example screen:

```
Enter a command, a direct command or press a PF-key.
  11:56:38                *** SYSTEM MAINTENANCE AID ***              1999-06-09
  User:  User_ID                    - Main Menu -                      SMMENM11


                            Command   Description
                            -------   -----------

                               T      Tapes

                               E      Environments

                               Z      Library Corrections

                               R      Reports

                               A      Administration




   Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                                    Canc
```

Note:
Direct Commands are described separately (see Direct Commands for further information).

T Tapes
After receiving a tape from Software AG, the customer should load the control data from the tape into SMA using a batch job. SMA then "knows" this tape and can display information on the tape and the products and datasets on it. The tape-handling functions also control the copying of datasets from tape to disk.

E Environments
This is the central part of SMA: The customer describes the environments where Software AG products are installed or are to be installed. This description consists of the products to be installed, the various parameters (SVC number, dataset names, etc.) and possibly locally adapted JCL and generated JCL. The JCL generation for a specified environment is also started within this function.

Z Library Corrections
ZAPs and other corrections which were delivered on an Software AG tape are also loaded into SMA and can be applied or removed using SMA functions. This has the advantage of improved control and documentation about where and when corrections have been applied. It is also possible to enter ZAPs manually into SMA and work with them subsequently.

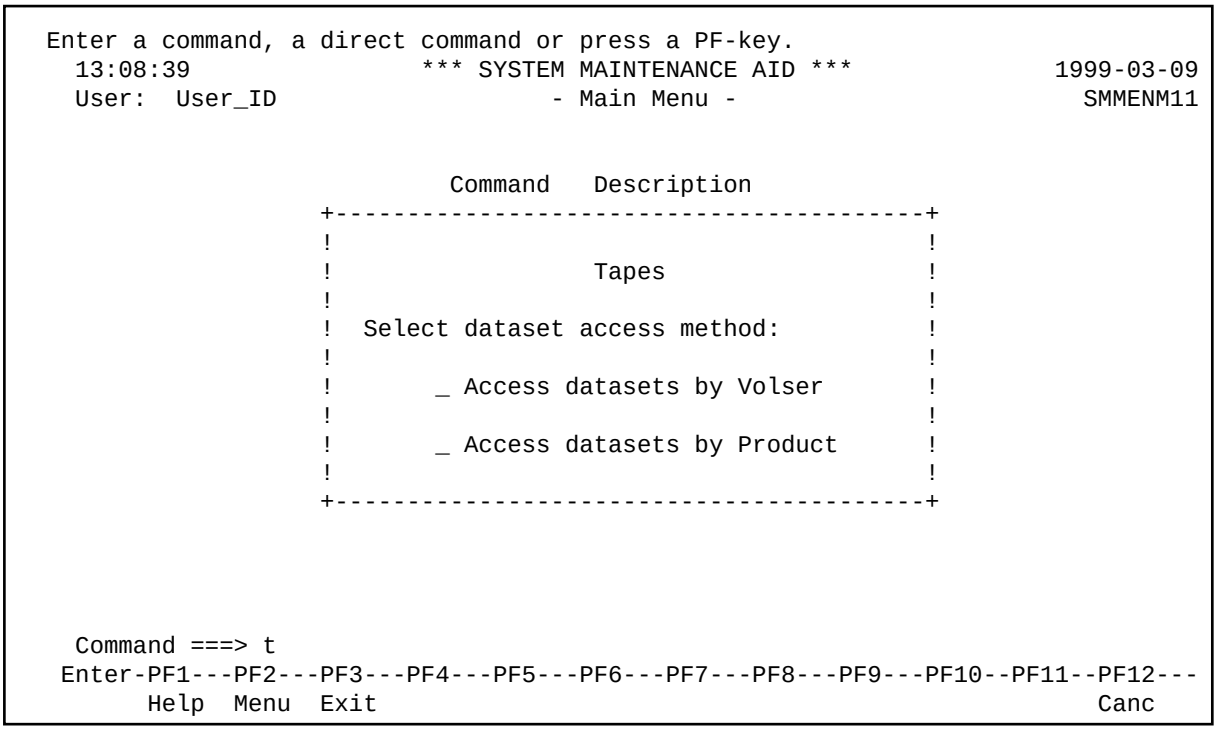
R Reports
Reports can be created to document the customer’s environments, tapes and datasets, and the installation of Software AG products.

A Administration
Administrative functions are available to specify a number of global parameters, unused tapes and/or products can be removed from the SMA data file.

Archived Tapes

Tape and product dataset information, which has been loaded on the system, can be accessed using function T on the Main Menu.

Example screen:



SMA prompts you to select how the information on datasets is to be accessed. Choices are made using either the volume serial number of the delivery tapes or by product code.

When "Access datasets by Volser" is selected, a list of tapes is displayed.

Example screen:

```
There is only 1 page available.
  13:14:57                *** SYSTEM MAINTENANCE AID ***              1999-03-09
  User:  User_ID                 - Archived Tapes -                     TPVOLM11

  Reposition to Volser: ______
  CMD  Volser  Op.Sys.   Description                                 Date Loaded
   __  T16064  OS/MVS    SMA - QA - TAPE                            1994-02-18









  Command ===> _____________________________________________________________

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

The user may select a tape by marking it with one of the following line commands:

- DA..Datasets
  A list of all datasets on this tape is shown. The user may select one or several datasets by marking it/them with a line command. From this point, the user may control the copying of datasets from tape to disk.
- JC..JCL-Generation
  JCL is generated for copying those datasets from the selected tape to disk which have been marked as "to be copied". Note that this JCL will also be generated automatically when JCL generation for product installation is requested in the "Environment" part of SMA.
- JO..Jobs
  This command displays the "Generated Jobs" screen for jobs generated with the JC..JCL Generation function.
- PR..Products
  A list of all products on this tape is shown. The user may select one of the displayed products. As a result, the list of datasets for this product, that are contained on this tape will be displayed.
- RE..Readme
  The tape may contain texts explaining the status or the purpose of the tape. Command RE will display this text.
- SE..Set-copied
  The dataset status "to be copied" is reset for all datasets on the selected tape.

Note:
In the Command Area, PF1 can be used to obtain Help, PF2 returns you to Main Menu, PF3 is used to exit, PF4 returns you to the top of list, PF5 returns you to the bottom of list, PF7 can be used to scroll to the previous page, PF8 to scroll to the next page PF9 is used to print a listing, and PF12 is cancel.

If PR (Products) was entered as a line command, press Enter, and the "Products On Tape" screen appears.

Example screen:

```
Please mark one product.
  13:06:58                *** SYSTEM MAINTENANCE AID ***              1999-03-11
  User:  User_ID               - Products On Tape -                    TPVPRM11

  Reposition to Product: ______            Volser: T16064
     M    Product    Description
     _    ACI525     ADABAS CICS INTERFACE
     _    ADA525     ADABAS
     _    AII525     ADABAS IMS/DC INTERFACE
     _    AOS225     ADABAS ONLINE SERVICES
     _    EDT152     NATURAL EDITOR
     _    ESX132     ENTIRE SYSTEM SERVER INTERFACE
     _    NAF225     NATURAL ADVANCED FACILITIES
     _    NAT225     NATURAL
     _    NA2508
     _    NA2510
     _    NA2511
     _    NCI225     NATURAL CICS INTERFACE
     _    NDB231     NATURAL FOR DB2
     _    NDL225     NATURAL FOR DL/1

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

Mark the desired item to display datasets for a specific product.

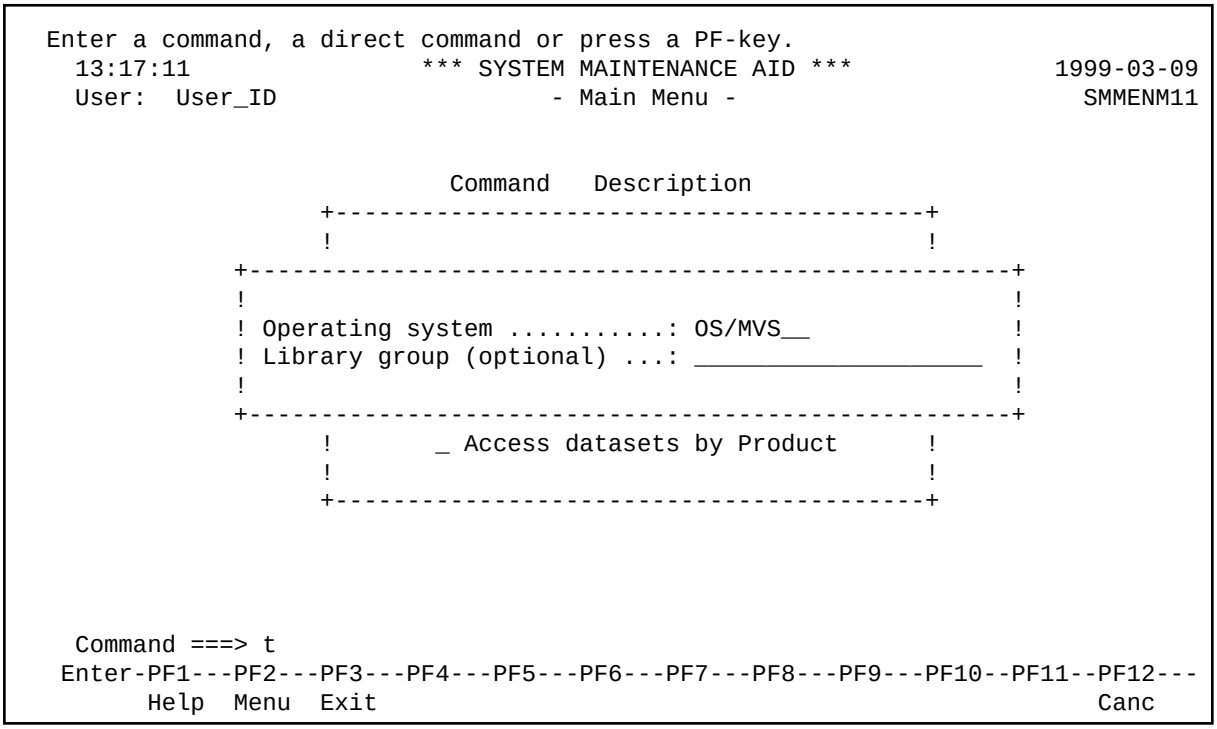
If DA (Datasets) was entered as a line command for "Datasets on Tape", press Enter, and the "Product Datasets" screen appears.

This screen is explained later in section Product Datasets.

Access Datasets by Product

When "Access Datasets by Product" was selected from the "Archived Tapes" entry window, the following screen is displayed.

Example screen:



Enter the Operating system, if not already displayed, and the Library group, if desired.

Use the Library group option only when selecting products where datasets/copies exist for a specific library group.

Press Enter, and the "Datasets by Product" screen appears, and a list of products for the selected tape is displayed.

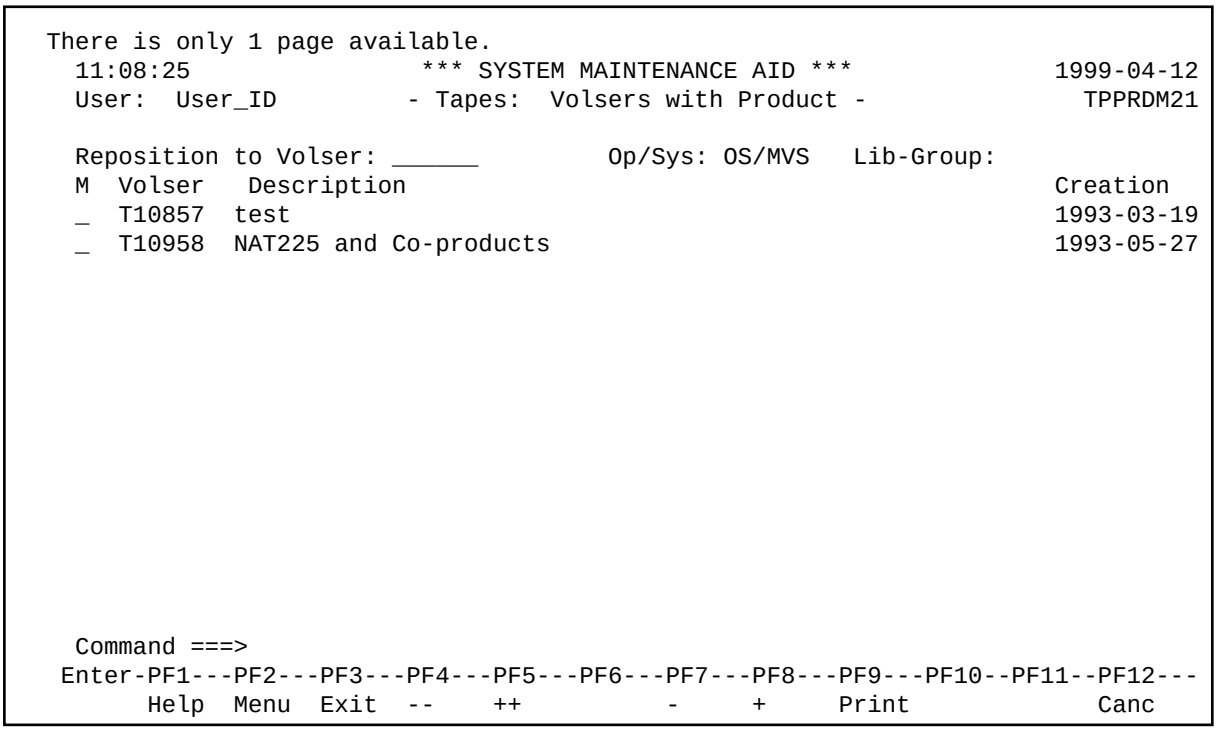
Example screen:

```
Please mark with 'x'.
  13:43:23                *** SYSTEM MAINTENANCE AID ***              1999-03-09
  User:  User_ID          - Tapes: Datasets by Product -                TPPRDM11

  Reposition to Product: ______        Op/Sys: OS/MVS   Lib-Group:
            M          Product         Description
            _          ACI525          ADABAS CICS INTERFACE
            _          ADA525          ADABAS
            _          AII525          ADABAS IMS/DC INTERFACE
            _          AOS225          ADABAS ONLINE SERVICES
            _          EDT152          NATURAL EDITOR
            _          ESX132          ENTIRE SYSTEM SERVER INTERFACE
            _          NAF225          NATURAL ADVANCED FACILITIES
            _          NAT225          NATURAL
            _          NA2508
            _          NA2510
            _          NA2511
            _          NCI225          NATURAL CICS INTERFACE
            _          NDB231          NATURAL FOR DB2
            _          NDL225          NATURAL FOR DL/1

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

This is a list of those products for which datasets are on the selected tape. The user may select the datasets of a product for processing by marking it with an "X".

If a product is contained on multiple tapes, the following screen appears.

Example screen:



Mark desired item with "X" to display datasets.

Product Datasets

When a product was marked on the "Datasets by Product" screen or when a product was selected on the "Volsers with Product" screen, the list of datasets on the selected tape is displayed.

Example screen:

```
There is only 1 page available.
  13:52:11                *** SYSTEM MAINTENANCE AID ***              1999-03-09
  User:  User_ID               - Product Datasets -                    TPPDSM11

  Reposition to Dataset: _____________________           Volser: T16064
  Cmd  Dataset Name      Description                     On Disc As            C
   __  NAT225.ERRN       Error messages file
   __  NAT225.EXPL       Example INPL file
   __  NAT225.INPL       INPL dataset
   __  NAT225.JOBS       MVS Example jobs for installat
   __    *      COPY IN  GROUP: TSTLIB                   TSTLIB.NAT225.JOBS    Y
   __  NAT225.LOAD       MVS Load dataset                SAGLIB.NAT225.LOAD
   __    *      COPY IN  GROUP: TSTLIB                   TSTLIB.NAT225.LOAD    Y
   __  NAT225.SRCE       MVS Source dataset
   __    *      COPY IN  GROUP: TSTLIB                   TSTLIB.NAT225.SRCE    Y
   __  NAT225.SYSF       System file




  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

Select one or several datasets for processing by marking it or them with one of the following commands:

- DE.. Delete-Copy
  This command deletes the table entry describing the copy of a dataset (library). The record pointing to the Software AG delivery group cannot be deleted.
  Note:
  This command does not delete the dataset itself; only SMA’s table entry for this dataset is deleted.

- MA.. Mark-For-Copy
  The dataset is marked as "to be copied". During the next JCL generating step, the JCL required for copying from tape to disk will be generated for all datasets on all tapes which have been marked.
- MO.. Modify
  A description of the selected dataset is shown. Some of the fields of this dataset description can be changed by the user.
- RE.. Reset-Mark
  This command resets the status of a dataset from "marked to be copied" to "not marked".

Dataset Parameters

When a dataset is selected via the command MO (Modify) from the "Product Datasets" screen, the dataset parameters are displayed.

Example screen:

```
Modify dataset parameters.
  12:09:48                *** SYSTEM MAINTENANCE AID ***              1999-03-10
  User:  User_ID               - Copy Parameters -                     TPCDSM11

  Volser .....  T16064
  Name on tape  NAT225.I008

  Description .........  008.INPL correction
  Symbolic Dataset Name  NAT225.I008
  Dataset Organization   PS
  Size (Kilo byte) ....  40
  Marked For Copy .....
  Dataset created on ..  93-11-04    16:01:05
  Dataset copied on....


  Library Grp   SAGLIB_______________
  Name on Disk  ____________________________________________________________
  Disk .......  ______
  Device Type   ________

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                                  Canc
```

The following dataset parameters which are used when copying datasets from tape to disk may be changed:

- Library Group
- Name on Disk
- Disk where the dataset is stored
- Device Type of this disk

If the dataset has been marked "to be copied", SMA fills the above fields with default values if they are blank. See Step 2: Copying Datasets from Tape to Disk in section Using System Maintenance Aid for the definition of the default values.

Note that SMA uses "Name on Disk" to determine whether the dataset resides on disk. A blank name indicates that the dataset is currently not available on disk.

Environment Maintenance

When function E is chosen in the Main Menu, the list of all environments is displayed.

Example screen:

```
There is only 1 page available.
  12:36:23                *** SYSTEM MAINTENANCE AID ***              1999-03-10
  User:  User_ID             - Environment Maintenance -                ENMENM11

  Reposition to Environment: ________
  Cmd  Environment  Op.Sys.   Description
   __  BS2000       BS2000    DEFAULT-ENVIRONMENT FOR BS2000
   __  BS2TST       BS2000    DEMO FOR BS2000
   __  OS/MVS       OS/MVS    DEFAULT-ENVIRONMENT FOR OS/MVS
   __  TEST         OS/MVS    DEMO AND INTRODUCTION
   __  UPROD        OS/MVS    USER PRODUCTION
   __  APPL         OS/MVS    APPLICATION DEVELOPMENT









  Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  --    ++          -     +     Print             Canc
```

The user may select an environment by marking it with one of the following line commands:

- CH..Check Environment
  This command executes a number of checks to find out incorrect specifications, for example, when a subproduct of Natural (e.g., Con-nect) is marked for installation, but Natural itself is neither installed nor "to be installed". Although many checks are performed, it is not possible to detect every inconsistency of parameter values.
- CJ..Copy Environment Jobs
  This command copies all the jobs which exist in this environment. You can specify a new name for the job group and assign a common prefix for the job names.
- CO..Copy Environment
  This command creates a new environment by copying an existing one. The user is prompted for a short descriptive text for the environment. The first line of this description will be used in the display-list of all environments.
  The following parts of the environment are copied:
  - old and new values of all parameters
  - JCL skeletons, if the existing environment is not a default environment
  - list of all available products, with the status of the products set to "not installed".
- DE..Delete Environment
  This function deletes the environment from SMA’s control file after the user has been prompted to confirm the request. Only SMA internal data is deleted, nothing happens "outside" of SMA, i.e., there is no "de-install" feature in SMA.
  A default environment cannot be deleted.
- JC..JCL-Generation
  This command starts the JCL generator. See section JCL Generation below for a description of this process. If an error is detected, it can be corrected with the MODIFY command.

- JO..Jobs
  This command displays the "Generated Jobs" screen for the current environment.
- MO..Modify Environment
  This line command displays the screens in which the user can describe the customer’s installation of Software AG products (see section Modifying an Environment below).
- SA..Saved Environment Jobs
  Invokes the Saved Jobs for Environment menu to process the saved jobs whose group name is an environment name.
- SE..Set Installed
  This command resets status information:
  - All products which have the status "to be installed" are marked as "installed".
  - Old parameter values are replaced by new values if specified.
  - The status of linked modules which have been changed by SMA’s "Library Correction" function is reset from "to be relinked" to "ok".

  This function is useful in two situations:
  - After describing an existing environment, the user calls this function to document that the products in this environment are already installed.
  - The last job generated during JCL generation executes this function in batch. Instead of using this job, the user may execute this function in dialog after successful execution of all generated jobs (except this last one).
- TE..Text Description
  The descriptive text for this environment can be modified. When this function is selected from the "Modify Environment" screen, a window appears providing four input lines. On these four lines, the purpose of each environment can be described in a short text. These lines appear in the reports about environments and help the user keeping track of input into SMA. The first of these four lines of text will also be displayed in the "Environment Maintenance" screen.
- CL..Clone Environment
  This command duplicates an environment. It creates a new environment by copying an existing one. The user is prompted for a short descriptive text for the environment. The first line of this description will be used in the display-list of all environments.
  The following parts of the environment are copied:
  - old and new values of all parameters
  - JCL skeletons, if the existing environment is not a default environment
  - list of all available products, with the same status.
- RN..Rename Environment
  This command renames an environment.

JCL Generation

The JCL generator is activated using the line command JC (JCL Generation) from the "Environment Maintenance" screen. JCL generation in dialog mode consists of the following steps:

1. The JCL generator first evaluates which parameter values are new and what products are "to be installed", and produces a list of all installation steps required for these changes. In this step, a lot of control data must be evaluated, thus it can take some time for its completion.
2. The "Installation Guide" indicating the generated jobs and steps is displayed. This list can be printed by pressing PF9. The printout will be useful as a checklist during the process of submitting and executing the generated jobs later on.
   By pressing Enter, the next page of this report can be displayed. PF6 can be used to skip the display and go on with JCL generation.
3. JCL generation itself starts. The job and step number currently generated is displayed at the bottom of the screen.

Note:
If Enter or a PF key is pressed during this process, an error may occur, and JCL generation will be interrupted.

After JCL generation has been completed, the number of errors detected during the generation is displayed. If this number is not equal to 0, the user should check whether a user modification of a JCL skeleton caused an error. If not, Software AG support personnel must be contacted.

Modifying an Environment

When the line command MO (MODIFY) is entered from the "Environment Maintenance" screen, the data describing the installation is displayed.

Environment Maintenance screen:

This menu offers the following options:

- Modify parameters accessed by name
  The list of all parameters in alphabetical order will be displayed for this environment by name, for displaying and modifying their values.
- Modify active parameters accessed by name
  This function is identical with the function "Modify Parameters accessed by name" except that only the *active* parameters are accessed.
  Active parameters are those parameters which were referenced during a JCL generation. This internal flag was introduced with SMA version 1.3.1, therefore, before the first JCL generation was executed with SMA version 1.3.1., all existing parameters are considered "inactive".
- Modify parameters accessed by group
  The parameters are combined in groups. If the user selects one of these groups on the "Parameter Group" screen (see below), the parameters of this group are shown, and new values may be entered.
- Modify active parameters accessed by group
  This function is identical with the function "Modify Parameters accessed by group" except that only the *active* parameters are accessed.
- Install Products
  The list of products will be displayed for selection of the products to be installed in this environment.
- Install Corrective IUPD (INPLs,ERRNs)
  A list of those corrections, which can be installed into a Natural system file, is displayed for selection. Typically, these are INPL problem tapes.
- Modify JCL Skeletons
  When this function is selected, the list of JCL skeletons available is displayed.

Modify Parameters / Active Parameters Accessed by Name

When this function is selected from the "Environment Maintenance" screen, the list of parameters appears, indicating the parameter name and value.

The parameters have two values: the installed value and the new value. The new value will be taken during the next JCL generation, and it will replace the installed value with the next SET-INSTALLED command.

A new value may be entered in the corresponding column, or one of the line commands used with the function "Modify Parameters accessed by Name", which are restricted to the selected group.

Example screen:

```
Enter new value(s) or line command(s)
  12:55:48                *** SYSTEM MAINTENANCE AID ***              1999-03-10
  User:  User_ID           - Modify Parameter Values -                 ENPRMM11

  Reposition to Parameter: _____________________    Env.: TEST
  Cmd  Name of Parameter     Installed Value           New Value
   __  ACF2                                           ______________________________
   __  ADA-CREATE-NEW-DB     Y                        ______________________________
   __  ADA-INSTAL-RAI        N                        ______________________________
   __  ADA-RAI-MINGENS       5                        ______________________________
   __  ADACICS               ADABAS                   ______________________________
   __  ASIZE                 32                       ______________________________
   __  ASM-DDRESULT          SYSLIN                   ______________________________
   __  ASMBLR                IEV90                    ______________________________
   __  ASYNC                                          ______________________________
   __  BPID                  0                        ______________________________
   __  BTSO-BATCH            NDBBTSO                  ______________________________
   __  CDYNAM                10                       ______________________________
   __  CICS3                                          ______________________________
   __  CICS3-3                                        ______________________________

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```


The user may enter a new value in the corresponding column or enter one of the line commands described below.

- DI.. Display
  A description of the selected parameter is displayed. (Understanding the complete set of parameters is more easily accomplished by report "P" available in SMA's "Reports" branch.) If this command is used, a screen appears.
- LO.. Long Value
  If the new value for a parameter does not fit into the corresponding column, the command LONG must be used. A window is displayed, allowing for the input of values with up to 72 characters. If this command is used, a window appears.
- SD..Set Default
  Sets the actual value to the value specified in the default environment.
- SE..Set Blank
  This command is used to set the new value of a parameter to blank. (This must be done with this command to tell the JCL generator that this blank really is the new value.)
- SI..Set Inactive
  Resets the internal active flag to inactive.
- TV..Transfer Value
  This command is only valid in the default environment. It transfers the values specified in the default environment to all other environments.

The parameters have two values: the installed value and the new value. The new value will be taken during the next JCL generation, and it will replace the installed value with the next SET-INSTALLED command.

Modify Parameters / Active Parameters Accessed by Group

When this function is selected from the Environment Maintenance screen, the list of parameter groups appears.

Parameter Groups screen:

```
12:56:33                *** SYSTEM MAINTENANCE AID ***              1999-03-10
 User:  User_ID               - Parameter Groups -                    ENPRMM21

 Reposition to Group: ______                     Environment: OS/MVS
                                  M     Group
                                  _     ADABAS
                                  _     BASIC
                                  _     DCPROD
                                  _     FILNUM
                                  _     LIBGRP
                                  _     NAF
                                  _     NAT
                                  _     NATPRM
                                  _     NCI
                                  _     NCO
                                  _     NDB
                                  _     NDL
                                  _     NII
                                  _     NTI

 Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  --    ++          -     +     Print             Canc
```

Mark one of the existing Groups. A screen similar to that previously described for "Modify Parameters / Active Parameters Accessed by Name" appears.

Install Products

When "Install Products" is selected from the "Environment Maintenance" screen, the list of all products is displayed.

Example screen:

```
Enter a command, a direct command or press a PF-key.
  16:12:17               *** SYSTEM MAINTENANCE AID ***              1999-06-07
  User:  User_ID                 - Product List -                      ENPRDM11

  Reposition to Product: ______       Environment: TEST
  Cmd  Product   Description                                 Status
   __  NCI233    NATURAL CICS INTERFACE                     installed
   __  NCI234    NATURAL CICS INTERFACE                     to be installed
   __  NCI312    NATURAL CICS INTERFACE                     -
   __  NCL211    NATURAL CONSOLE MANAGEMENT                 -
   __  NCL212    ENTIRE EVENT MANAGEMENT                    -
   __  NCO233    NATURAL COMPLETE INTERFACE                 -
   __  NCO234    NATURAL COMPLETE INTERFACE                 -
   __  NCO311    NATURAL COMPLETE INTERFACE                 -
   __  NCO312    NATURAL COMPLETE INTERFACE                 -
   __  NDB233    NATURAL DB2 INTERFACE                      -
   __  NDB234    NATURAL FOR DB2                            -
   __  NDB312    NATURAL FOR DB2                            -
   __  NDL233    NATURAL DL/1 INTERFACE                     -
   __  NDL234    NATURAL DL/1 INTERFACE                     -

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

In this screen, all products are listed which are known in this SMA file. This list of products is the same for all environments, but the status of each product may differ between environments.

The user may select one or several products by marking it or them with one of the following commands:

- IN.. Install
  The product receives the status "to be installed". The products having this status will actually be processed by the next JCL generation for this environment.
- RE.. Reset Status
  This command removes the status "to be installed". It is used to reset this status if the INSTALL command has been issued inadvertently.
- UN.. Un-install
  The status "installed" is set to "-", meaning "not installed". Note that in the present version of SMA no JCL to "un-install" a product is generated. This command only causes the status to be changed in SMA internal tables and has no effect "outside" of SMA.
- RM..Show Readme
  Displays the Readme file of the product. This file contains information about the installation of these products using SMA.

Install Corrective IUPD - INPLs and ERRNs

When "Install Corrections in System files (INPLs, ...)" is selected from the "Environment Maintenance" screen, the list of all corrections for Natural system files is displayed.

Example screen:

```
Enter a command, a direct command or press a PF-key.
  14:49:18               *** SYSTEM MAINTENANCE AID ***              1999-06-13
  User:  User_ID              - Correction List -                     ENPRDM11

  Reposition to Correction : ______   Environment: TEST
  Cmd  Correct.  Description                                  Status
   __  P06027    PROBLEM SOLUTION INPL                       to be installed
   __  P07668    PROBLEM SOLUTION INPL FOR SMA111            -
   __  P09489    ADABAS TEXT RETRIEVAL 1.3.3                 -
   __  P16005    PROBLEM SOLUTION INPL                       -
   __  P19509    PROBLEM SOLUTION FOR P119509                -
   __  P19756    PROBLEM SOLUTION FOR P119756                -
   __  P22126    PROBLEM SOLUTION FOR P122126                -
   __  P24378    PRD322 SOLUTION TO PROBLEM: 124378          -
   __  P24805    SAT211 SOLUTION TO PROBLEM: 124805          -
   __  P97531    (=NE2531)NSC225 CORRECTIVE TAPE-31          -
   __  P97602    (=NE2602)NSC226 CORRECTIVE TAPE-02          -
   __  P97603    (=NE2603)NSC226 CORRECTIVE TAPE-03          -
   __  P97605    (=NE2605)NSC226 CORRECTIVE TAPE-05          -
   __  P97612    (=NE2612)NSC226 CORRECTIVE TAPE-12          -

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

In this screen, all corrections are listed which are known in this SMA file. This list of corrections is the same for all environments, but the status of each may differ between environments.

The user may select one or several corrections by marking it/them with one of the following commands:

- IN.. Install
  The correction receives the status "to be installed". The corrections having this status will be processed by the next JCL generation for this environment.
- RE.. Reset Status
  This command removes the status "to be installed". It is used to reset this status if the INSTALL command has been issued inadvertently.
- UN.. Un-install
  The status "installed" is set to "-", meaning "not installed". Note that in the present version of SMA no JCL to "un-install" a correction is generated. This command only causes the status to be changed in SMA internal tables and has no effect "outside" of SMA.

Modify JCL Skeletons

After selection of this function from the "Modify Environment" screen, a list of all skeletons available, including a short explanation for each skeleton, is displayed.

Example screen:

```
Enter a command, a direct command or press a PF-key.
  12:52:36                *** SYSTEM MAINTENANCE AID ***              1999-03-10
  User:  User_ID             - Modify JCL Skeletons -                   ENSKLM11

  Reposition to Skeleton: _____________________   Environment: OS/MVS
  Cmd E   Skeleton Name         Version  Description
   __     ACI-CMDLNK            93-03-09 COMMAND LEVEL LINK ROUTINE ASSEMBLY
   __ x   ACIINSTR              93-03-29 INSTRUCTIONS FOR ADABAS CICS INTERFACE
   __     ADA-FILES             93-03-29 INCLUDE: DD-CARDS FOR THE ADABAS-FILES
   __     ADACPL                92-12-10 ADABAS COUPLE FILES (V5)
   __     ADADEF5               92-12-10 ADABAS DEFINE DATABASE
   __     ADAEXPL               92-12-10 ADABAS EXAMPLES WITHOUT FILES
   __     ADAEXPL-F             92-12-10 ADABAS EXAMPLES WITH FILES
   __     ADAFRM-RAI            93-04-01 ADABAS ALLOCATE AND FORMAT RAI-FILE
   __     ADAFRM5               92-12-10 ADABAS ALLOCATE AND FORMAT DATABASE-FILE
   __     ADALIBS               92-12-10 INCLUDE: DD-CARDS FOR ADABAS
   __     ADALOD                93-08-09 ADABAS LOAD FILE (V5)
   __     ADAMAT                92-12-10 INCLUDE: ADABAS MIGRATION AID TABLE
   __     ADANUC5               92-12-10 ADABASE NUCLEUS JOB
   __     ADARAI-INST           93-03-29 INSTRUCTIONS FOR ADABAS REFLECTIVE DATAB

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

Note:
The skeletons which have already been modified for this environment are marked with an "X" in column "E".

The JCL skeletons are used during JCL generation to expand the installation steps into executable JCL. These JCL skeletons are supplied by Software AG, but they may be modified by the user. Modifications of JCL skeletons in the default environment are valid for all other environments, whereas modifications of JCL in a user environment are valid for this environment only.

The following line commands may be selected and used:

- CO.. Copy Skeleton
- DE.. Delete User Skeleton
- DI.. Display Skeleton
- MO.. Modify Skeleton
- PR.. Print Skeleton

Modify Skeleton

When the line command MO (Modify Skeleton) is entered on the "Modify JCL Skeletons" screen, the Natural editor for modifying the JCL Skeleton appears.

Example screen:

```
Command ===>                                                          > +
 Top    Environment: TEST               Skeleton: ADADEF5             ....7..
   0010 //*
   0020 //* ADABAS ADADEF UTILITY
   0030 //*
   0040 //DEF#S-SEQ# EXEC PGM=ADARUN
   0050 //STEPLIB   DD DSN=#D-DSN-D(ADA&&&.LOAD)#,DISP=SHR
   0060 #I-ADA-FILES#
   0070 //DDPRINT   DD SYSOUT=#V-SYSOUT#
   0080 //DDDRUCK   DD SYSOUT=#V-SYSOUT#
   0090 //MPMDUMP   DD SYSOUT=#V-SYSOUT#
   0100 //DDCARD    DD *
   0110 ADARUN DB=#V-DBID#,DE=#V-DB-DEVICE#,SVC=#V-SVC#,PROG=ADADEF
   0120 //DDKARTE   DD *
   0130 ADADEF DEFINE
   0140 ADADEF        DBIDENT=#V-DBID#
   0150 ADADEF        DBNAME=#V-DBNAME#
   0160 ADADEF        MAXFILES=#V-DB-MAXFILS#
   0170 ADADEF        ASSODEV=#V-DB-DEVICE#
   0180 ADADEF        ASSODEV=#V-DEVICE-A2#
   0190 ADADEF        ASSODEV=#V-DEVICE-A3#
   0200 ADADEF        ASSODEV=#V-DEVICE-A4#
        ....+....1....+....2. Press PF11 to edit conditions  No.of.Lines:   44
```

Note:
Use the "," as the escape character for line commands. Use PF11 to shift the screen to the right to view line conditions. Use PF10 to shift back (toggle effect).

Refer to JCL Skeletons for a further explanation of skeleton modification.

Working with Generated Jobs

If the function JO (Jobs) is entered in the "Environment Maintenance" screen after JCL generation has been performed, the list of all generated jobs is displayed.

Example screen:

```
There is only 1 page available.
  11:13:50                *** SYSTEM MAINTENANCE AID ***              1999-04-12
  User:  User_ID          - Generated Environment Jobs -                ENJOBM11

  Reposition to Job: ________                 Environment: TEST
    Cmd        Job             Description                          Status
     __        Report          Installation Guide                   Open
     __        T614            COPY DATASETS FROM TAPE              Submitted
     __        P060            READ ME; DO NOT SUBMIT               Open
     __        I008            ALLOCATE DATASETS                    Submitted
     __        I009            COPY DATASETS                        Submitted
     __        I051            MIGRATION JOB                        Submitted
     __        I055            ASSEMBLIES OF BATCH NATURAL          Submitted
     __        I060            PARM + LINK BATCH NATURAL            Submitted
     __        I061            INPL NATURAL APPLICATIONS            Submitted
     __        I070            PREPARATIONS ONLINE NATURAL          Submitted
     __        I080            PARM + LINK ONLINE NATURAL           Submitted
     __        I100            READ ME; DO NOT SUBMIT               Open
     __        I200            SETUP - JOBS                         Submitted
     __        I999            SMA COMMIT AND ENV.REPORT            Open

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```


- MO.. Modify Job
  The generated job is displayed. The user can browse through the generated job, using PF7 and PF8 to scroll backwards and forwards, print the job, or modify it before submitting it to the operating system for execution. Usage of the editor for modification is explained in Using the Editor and Help Facility.
  Note:
  SMA is designed to make changes in the generated jobs unnecessary. If frequent changes of the jobs are required, the job skeletons which are used during JCL generation should be changed. Refer to JCL Skeletons or the appropriate report to find out which skeletons are involved.

- SU.. Submit Job
  The generated job is passed to the operating system for execution. The status and successful execution of a job are **not** checked by SMA; this must be done by the user. Within SMA, a job can have the status:
  - OPEN: The job has been generated and has not yet been submitted.
  - SUBMITTED: The job has been submitted. It is possible to submit a job, change it and re-submit it.

  Note that the order of submitting the generated jobs is checked: A job may only be submitted if all jobs preceding this job in the list of jobs have already been submitted.

- DE.. Delete Job
  With this command, a job can be deleted manually by the user. Normally, the stored generated jobs should be deleted by the user after successful execution of all jobs.
- CO.. Copy Job
  Jobs of an environment must be deleted before the next JCL generation. A user who wishes to keep a job (as an example or for later usage) may enter the COPY command for this job. SMA asks for a new name and "job group". If the "Saved Jobs" function is entered from SMA’s Administration Menu, the copied job can be found under the specified name.
- PR.. Print Job
  The selected job will be printed.

Library Corrections

In this section of SMA, you control how corrections (i.e., ZAPs, Source Changes, and Module Replacement) are applied to the Software AG Product Libraries.

When function Z is chosen in the Main Menu, a list of all library groups is displayed.

Example screen:

```
Enter a command, a direct command or press a PF-key.
  12:27:40                *** SYSTEM MAINTENANCE AID ***              1999-06-09
  User:  User_ID      - Correction List of Library Groups -             COLBGM11

  Reposition to Op.Syst:  ________ Lib.Group: ____________________

            Cmd   Op. System  Library Group
             __   BS2000      $SAG
             __   BS2000      SAGLIB
             __   OS/MVS      TSTLIB
             __   OS/MVS      SAGLIB









   Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++    AddZ  -     +     Print             Canc
```

The user may select a correction for a library group by marking it with one of the following line commands:

- DI.. Display Corrections
  All possible corrections for the selected library group are displayed. If this command is used, the screen "ZAPs and Source Changes" appears.
- JC..JCL-Generation
  This command performs JCL generation for corrections in the library group with the status "to be applied" or "to be undone". See JCL Generation in this section for a description of this process.
- JO..Jobs
  This command displays the "Generated Jobs" screen for this library group.
- SE..Set-Applied
  This command resets status information: All corrections within the library group with the status "to be applied" or "to be undone" receive the status "applied" or "undone" with this command.

Display Corrections

If DI (Display Corrections) is entered as a line command in "Correction List of Library Groups" a screen listing all ZAPs and source changes for a library group appears:

```
13:31:17                *** SYSTEM MAINTENANCE AID ***              1999-07-08
 User:  TSL               - Zaps and Source Changes -                  COZAPM11

 Reposition to Change: ____________       Library Group: SAGLIB
 Cmd  Change No.   Tp.  Dataset Name                    Ed. Status
  __  AN52445       Z   SAGLIB.ADA522.LOAD              Y
  __  AN52455       Z   SAGLIB.ADA525.LOAD              Y
  __  AN52456       Z   SAGLIB.ADA522.LOAD              Y
  __  AN52457       Z   SAGLIB.ADA522.LOAD              Y  Applied
  __  AN52461       Z   SAGLIB.ADA522.LOAD              Y
  __  AN52494       Z   SAGLIB.ADA522.LOAD              Y
  __  AN52516       Z   SAGLIB.ADA522.LOAD              Y  Applied
  __  AN52537       Z   SAGLIB.ADA522.LOAD              Y  Applied
  __  AN52683       Z   SAGLIB.ADA523.LOAD              Y
  __  AN52728       Z   SAGLIB.ADA524.LOAD              Y
  __  AN52729       Z   SAGLIB.ADA524.LOAD              Y
  __  AN52857       Z   SAGLIB.ADA524.LOAD              Y
  __  AN52954       Z   SAGLIB.ADA525.LOAD              Y
  __  AN52966       Z   SAGLIB.ADA525.LOAD              Y  To Be Applied

Enter a command, a direct command or press a PF-key.
 Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  --    ++          -     +     Print             Canc
```

Note:
The field "Reposition to Change" at the top of the screen provides the possibility to start the list of changes at the specified change. You can use this repositioning to show the corrections for a specific product (due to the naming conventions of Software AG product corrections).

This list shows the dataset names of the affected libraries, and gives the following information per correction:

- number of the change, used for identification purposes
- its type (Z: ZAP, S: source change, L: load module replacement)
- status of the change

The status of a change may be any of the following:

"to be applied"	The line command APPLY has been entered for this correction, but the direct command SET-APPLIED has not yet been executed.
"applied"	The line command APPLY has been issued for this correction, and SET-APPLIED has been executed.
"to be undone"	The line command UNDO was entered for this correction, but the direct command SET-APPLIED was not executed. The generated job will contain the ZAP in a "reverse" form, where all VERIFY(s) are converted to REPLACE(s) and vice versa.
"undone"	The line command UNDO was entered for this correction, and SET-APPLIED was executed.
blank	The correction was neither applied nor undone.

The following line commands are possible:

- AP.. Apply Correction
  Sets the status for this change from blank or "undone" to "to be applied".
- CO.. Copy a Correction
  A window appears asking for target parameters for copying the correction.
- DE.. Delete Correction
  The change in the selected library group is deleted from SMA.
- DI.. Display Correction
  The selected change is displayed. If this command is used, a screen showing the text of the correction appears.
- MO.. Modify Correction
  This allows editing of the change. This command is only valid if there is a "Y" in the "Ed" column in the list of changes. If this command is used, the screen "Modify a Correction" appears.
- RE.. Reset Status
  This command sets the status from "to be applied" to blank or from "to be undone" to "applied".
- UN.. Undo Correction
  Sets the status from "applied" to "to be undone".

Note:
The line commands MODIFY and DELETE are only possible if the change is not applied in any library group.

Modify Correction

If MO (Modify Correction) is entered as a line command the following screen appears:

```
Please edit. (Escape character for line commands is ",")
 Command ===>                                                          > +
 Top    Change: AN52494      Type: Z DSN: ADA522.LOAD          ....6....+....7..
   0010 *  ZAP NO:    AN52494
   0020 *  PRODUCT:   ADA522
   0030 *  MODULES:   ADANC2/ADANC9
   0040 *  KEYWORDS:  ADANET
   0050 *  PROBLEM:   A PET COMMAND (PRILIMINARY ET) IS ONLY PERMITTED
   0060 *             IN AN ADANET ENVIRONMENT, NOT PERMITTED ON A NUCLEUS
   0070 *             RUNNING WITH ADANET=ISO.
   0080 *
   0090 NAME ADANC2
   0100 VER 0080 0002
   0110 VER 009A 0000
   0120 VER 1108 92D7,CEB6,9205,CEB4,95C5,C023,4770,904E
   0130 VER 1118 D203,C060,C03C,D201,C078,C01A,5810,AC54
   0140 VER 1128 0521,9680,E053
   0150 REP 1108 95C9,A2C4,4770,9042,9240,C022,47F0,905C
   0160 REP 1118 92D7,CEB6,9205,CEB4,D203,C060,C03C,5810
   0170 REP 1128 AC54,05BB,55C2
   0180 REP 009A 0040
   0190 CHECKSUM B59B781F
   0200 IDRDATA AN52494
        ....+....1....+....2....+....3....+....4....+....5...No.of.Lines:   33
```

With this screen, you can modify the DSN of the library where this correction is to be applied. In addition, you may modify the text of the correction using the standard editor commands (see Using the Editor and Help Facility).

Display Jobs

If the function JO (Jobs) is entered as a line command in "Correction List of Library Groups", a screen with all generated correction jobs appears.

Example screen:

```
14:57:59                *** SYSTEM MAINTENANCE AID ***              1999-06-13
 User:  User_ID          - Generated Correction Jobs -                 COZJBM11

 Reposition to Job: ________                Environment: TEST
   Cmd        Job            Description                        Status
    __        Z010           SAGLIB:APPLY ZAPS                  Open









 Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  --    ++          -     +     Print             Canc
```

The following line commands may be selected and used:

- CO.. Copy Job
  A user who wishes to keep a job (as an example or for later usage) may enter the COPY command for this job. SMA asks for a new name and "job group". If the "Saved Jobs" function is entered from SMA's Administration Menu, the copied job can be found under the specified name.
- DE.. Delete Job
  With this command, a job can be deleted manually by the user. Normally, the stored generated correction jobs should be deleted by the user after successful execution of all jobs.
- MO.. Modify Job
  The generated correction jobs are displayed. The user can browse through the generated job, using PF7 and PF8 to scroll backwards and forwards, print the job, or modify it before submitting it to the operating system for execution. Usage of the editor for modification is explained in Using the Editor and Help Facility.
  Note:
  SMA is designed to make changes in the generated jobs unnecessary. If frequent changes of the jobs are required, the job skeletons which are used during JCL generation should be changed. Refer to JCL Skeletons or the appropriate report to find out which skeletons are involved.
- PR.. Print Job
  The selected job will be printed.
- SU.. Submit Job
  The generated job is passed to the operating system for execution. The status and successful execution of a job are NOT checked by SMA; this must be done by the user. Within SMA, a job can have the status:
  - OPEN: The job has been generated and has not yet been submitted.
  - SUBMITTED: The job has been submitted. It is possible to submit a job, change it and re-submit it.

Add a Change

When the PF6 key is pressed in the "Correction List of Library Groups", the following screen is displayed:

```
16:16                    *** SYSTEM MAINTENANCE AID ***              1999-06-09
 User: User_ID                   - Add a Correction -                   COADZM01



                         Correction number....: ____________


                         Type of correction...: _ < Z - Zap           >
                                                < S - Source Change >
                                                < L - Replace Libr. Member >

                         Operating system.....: OS/MVS__


                         Symbolic dataset name: ____________________




 Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                                    Canc
```

In this screen, a correction which is not available in a machine-readable form can be entered. The following must be specified:

- Correction number:
  Number of the change, must be unique.
- Type of correction:
  Type: Z = ZAP, S = source change, L = replace library member.
- Operating system:
  Name of the operating system.
- Symbolic dataset name:
  Symbolic name of a library as shown in the "Tapes" part of SMA.

Following this screen, the function "Modify Corrections" is invoked, allowing the user to enter the text for the new correction manually.

Reports

When function R is entered in the Main Menu, the following screen is displayed:

This menu provides a number of choices for SMA’s reporting facility. Two groups of SMA reports are available:

- Reports about the installation data (tapes, environments, parameters, ZAPs)
- Reports about SMA’s knowledge on how to install Software AG products (Product Installation Table, usage of parameters, dependencies between products).

The different reports are also available via the REP... direct commands which are described in Printing Reports.

Administration

When function A is entered in the Main Menu, the following screen is displayed:

The following administrative functions are available:

- Global Parameters
  Maintain parameters which do not belong to a specific environment.
- Saved Jobs by group / by name
  Maintain, modify, and submit jobs contained in the "saved" pool. These jobs were created with the line command Copy (CO) from generated jobs or Copy Environment Jobs (CJ) in the Environment Maintenance function.
- SMA Profile
  Select some general default values.
- Tabload
  Maintain and submit job to LOAD table data.
- Unused Products
  The products which are not installed in any environment are shown, and the user may select one or several of these products for deletion from SMA’s internal tables. (Note that this function deletes nothing outside of SMA’s tables)
- Unused Tapes
  When a product is deleted, the dataset information for this product is also deleted. This may result in tapes for which no dataset information is available. The user may select such tapes for deletion from SMA’s internal tables.

Global Parameters

When "Global Parameter" is selected from the "Administration" screen, the following screen is displayed:

```
There is only 1 page available.
  16:21:16                *** SYSTEM MAINTENANCE AID ***              1999-06-07
  User:  User_ID        - Modify Global Parameter Values -             ADPARM11

  Reposition to Parameter: _____________________
  Cmd  Name of Parameter     Value
   __  MVS-LIB-ALLOC-TYPE    TRK_____________________________________________
   __  MVS-LIB-EXPIRATION    99365___________________________________________
   __  MVS-LIB-GROUP         SAGLIB__________________________________________
   __  MVS-LIB-GROUP-UNIT    3380____________________________________________
   __  MVS-LIB-GROUP-VOL     SAGVOL__________________________________________
   __  MVS-NAT-BATCH         NATBAT22________________________________________
   __  MVS-DSN-USER-LOAD     OPS.PROD.LOAD___________________________________
   __  MVS-DSN-ADA-LOAD      OPS.ADA5.LOAD___________________________________
   __  MVS-SVC               247_____________________________________________
   __  MVS-DB-DEVICE         3380____________________________________________




  Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  --    ++          -     +     Print             Canc
```

The user may enter a new value or one of the line commands described below.

- DI.. Display
  A description of the selected parameter is displayed. (Understanding the complete set of parameters is more easily accomplished by report "P" available in SMA’s "Reports" branch.) If this command is used, a screen appears.
- LO.. Long Value
  If the new value for a parameter does not fit into the corresponding column, the command LONG must be used. A window is displayed, allowing for the input of values with up to 72 characters. If this command is used, a pop-up window appears.

These global parameters are used whenever parameters are needed which are not fully environment dependent. In particular, this concerns:

The "commit" skeletons / SMA-COMMIT, ZAP-COMMIT

These skeletons invoke a batch Natural nucleus which is frequently different from the one generated in the particular user environment.

The following global parameters are used in these skeletons:

- MVS-NAT-BATCH or VSE-NAT-BATCH
  Name of the batch Natural nucleus
- MVS-DSN-USER-LOAD or VSE-DSN-USER-LIB
  Name of the load library for batch
- MVS-DSN-ADA-LOAD or VSE-ADA-LIB
  Name of the Adabas load library
- MVS-SVC or VSE-SVC
  SVC number
- MVS-DB-DEVICE or VSE-DB-DEVICE
  Device type

Note:
This list is dynamic and may grow as needed. In BS2000, this is not needed.

The following example may clarify the need for this:

The name of the batch Natural nucleus for SMA itself is not the one which is currently being installed, but it already exists, and most probably has a different name from the one currently being installed.

Copy of datasets from tape to disk:

During execution of command LOAD or when "marking a dataset for copy" within the tape part parameters are needed for allocating and naming the dataset on disk.

The following global parameters are used for this purpose:

- MVS-LIB-GROUP or VSE-LIB-GROUP or BS2-LIB-GROUP
  High level qualifier for dataset names
- MVS-LIB-ALLOC-TYPE
  TRK, CYL or BLKS to be used in the SPACE parameter of the DD-statement
- MVS-LIB-GROUP-VOL or VSE-LIB-GROUP-VOL or BS2-LIB-GROUP-VOL
  Target disk for copying the dataset
- MVS-LIB-GROUP-UNIT or VSE-LIB-GROUP-UNIT
  Device type of this disk.

Note:
For users of versions of SMA before SMA 1.2.1: in SMA 1.1, the global values were taken from the default environments, e.g., from environment OS/MVS or BS2000.

Display Global Parameter

If DI (Display) is entered as a line command in "Modify Global Parameter Values" a screen appears.

Example screen:

```
10:48:11               *** SYSTEM MAINTENANCE AID ***              1999-06-08
  User:  User_ID           - Display Product Parameter -                ENIPPM11

  Name of parameter  EXPIRATION

  Group ...........  GLOBAL          Operating System  #INTERN
  Description .....
  EXPIRATION-DATE USED IN ALL DD-CARDS FOR DATASETS FROM TAPE.




  Parm value  min .                  max                 Format of Parm  A
  Default value ...  99365
  Possible values .



                                                         Change Allowed  Y

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                                   Canc
```


Saved Jobs

When "Saved Jobs" is selected from the "Administration" screen, the following screen is displayed:

```
Commands executed.
  16:28:39                *** SYSTEM MAINTENANCE AID ***              1999-06-07
  User:  User_ID                    - Saved Jobs -                     ADSAVM11

  Reposition to Job Group: ____________________
  Cmd  Job Group             Job       Description                  Status
   __  AAAAAA                Report    Installation Guide           Open
   __  AAADB161              I200-JKL  SETUP - JOBS                 Submitted
   __  AAADB161              I200-NOP  SETUP - JOBS                 Submitted
   __  AAADB25               I200-NOP  SETUP - JOBS                 Submitted
   __  AAAJBE                I060-SAT  PARM + LINK BATCH NATURAL    Submitted
   __  AAAJBE                I080      PARM + LINK ONLINE NATURAL   Submitted
   __  AAAJBE                I080-SAT  PARM + LINK ONLINE NATURAL   Submitted
   __  AAAJBE                I080-1    PARM + LINK ONLINE NATURAL   Submitted
   __  AAAJBE                I080-2    PARM + LINK ONLINE NATURAL   Submitted
   __  AAPFHVSE              I080      PARM + LINK ONLINE NATURAL   Open
   __  ABCMTH                I055      ASSEMBLIES OF BATCH NATURAL  Submitted
   __  AZ6A                  AZ70SM5   NO DESCRIPTION AVAILABLE     Submitted
   __  AZ6A                  I080BB    NO DESCRIPTION AVAILABLE     Submitted
   __  AZ6V                  I052V     NO DESCRIPTION AVAILABLE     Submitted

  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

The user may enter one of the line commands described below.

- MO.. Modify
  The saved job is displayed. The user can browse through the jobs using PF7 and PF8 to scroll backwards and forwards, print the job, or modify it before submitting it to the operating system for execution. Usage of the editor for modification is explained in Using the Editor and Help Facility.
- SU..Submit
  The saved job is passed to the operating system for execution. The status and successful execution of a job are **not** checked by SMA; this must be done by the user. Within SMA, a job can have the status:
  - OPEN: The job has been saved and has not yet been submitted.
  - SUBMITTED: The job has been submitted. It is possible to submit a job, change it and re-submit it.
- DE.. Delete
  With this command, a job can be deleted manually by the user.
- CO.. Copy
  The COPY command allows the user to copy saved jobs as often as is desired.
- PR.. Print
  The selected job will be printed.

SMA Profile

When "SMA Profile" is selected from the "Administration" screen, the following screen is displayed:

```
Modify the values you want to be changed.
  13:05:24                *** SYSTEM MAINTENANCE AID ***              1999-03-10
  User:  User_ID                  - SMA Profile -                       ADPRFM11



  Printing Defaults - Page Size .....................  59
                      Printer ID ....................  CMPRT 01

  Language Code .....................................  1  (1=English, 2=German)

  Confirm SAVE ......................................  Y  (Y,N)

  Display SMA LOGO menu .............................  Y  (Y,N)


  Changes are to be valid during this session only ..  N  (Y/N)




  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                                    Canc
```

The following specifications can be entered or changed:

- Page size for the printouts
- Printer ID for reports and print functions
- Language code:

  1 English

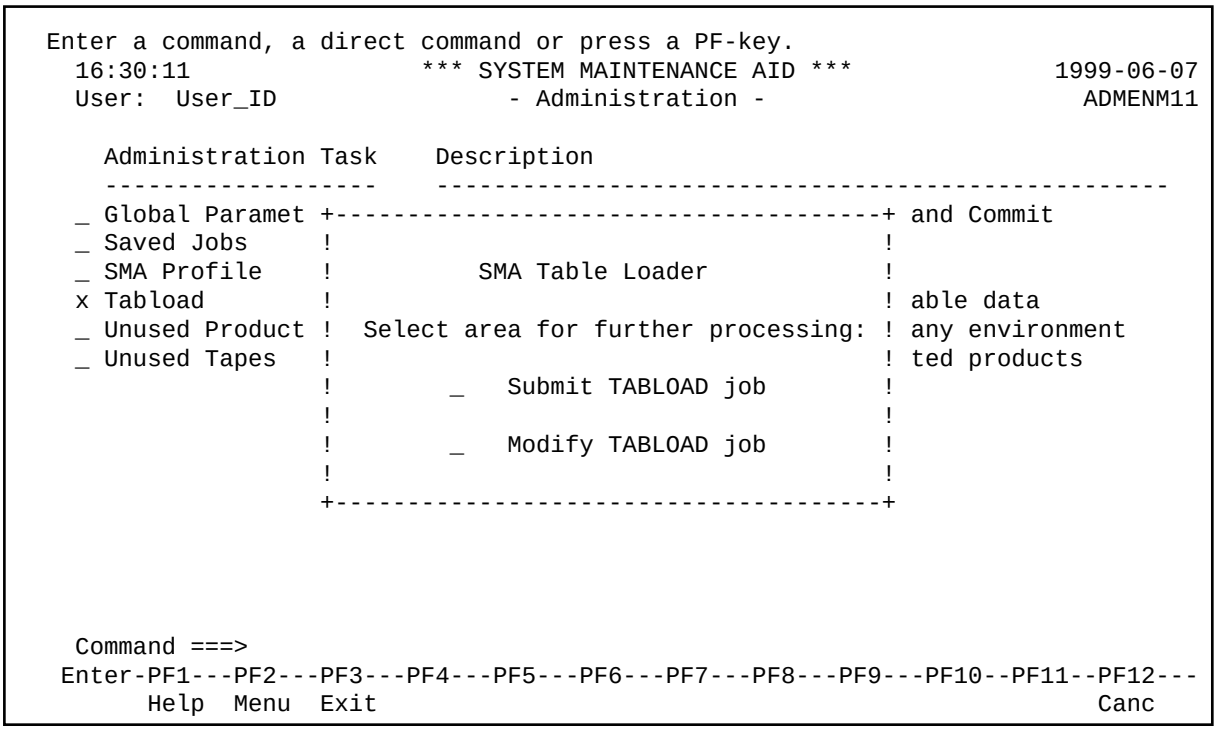
  2 German

- Confirm SAVE in the editors and in the modify parameter screens
- Display SMA LOGO when starting

The values entered by the user are either valid for this session only (this is the default) or are stored in the SMA data file permanently if "Changes are to be valid during this session only?" is answered with "N".

Tabload

When "Tabload" is selected from the "Administration" screen, the following window appears:



The following specifications can be entered or changed:

- Submit TABLOAD job to invoke the SMA Table Loader for recognition of a new tape by SMA. A window requesting submission parameters appears.
- Modify TABLOAD job for maintenance of the job text. When this function is selected, the editor screen appears.

Unused Products

When "Unused Products" is selected from the "Administration" screen, the list of products not installed is displayed.

Example screen:

```
There is only 1 page available.
  16:33:07                *** SYSTEM MAINTENANCE AID ***              19994-06-07
  User:  User_ID               - Unused Products -                     ADUPRM11

 Reposition to Product: ______
  M  Prod.  Op.Sys.  Description                              Removed from Envir.
  _  ADL221 OS/MVS   ADABAS BRIDGE FOR DL/I                   1999-02-04 / TEST
  _  ETP121 OS/MVS   ENTIRE ASYNCHRONOUS TRANSACTION SERVER 1999-01-14 / TEST
  _  REV342 OS/MVS   REVIEW DATABASE                          was never installed
  _  XNP125 OS/MVS   XNP LIMITED LIBR. (NO INSTALL STEPS)     1999-01-07 / APPL









  Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  --    ++          -     +     Print             Canc
```

In the list of products displayed, the user may select the product(s) to be deleted by SMA. Candidates for deletion are the products which have been superseded by later versions from Software AG in all environments.

The following SMA table data is deleted:

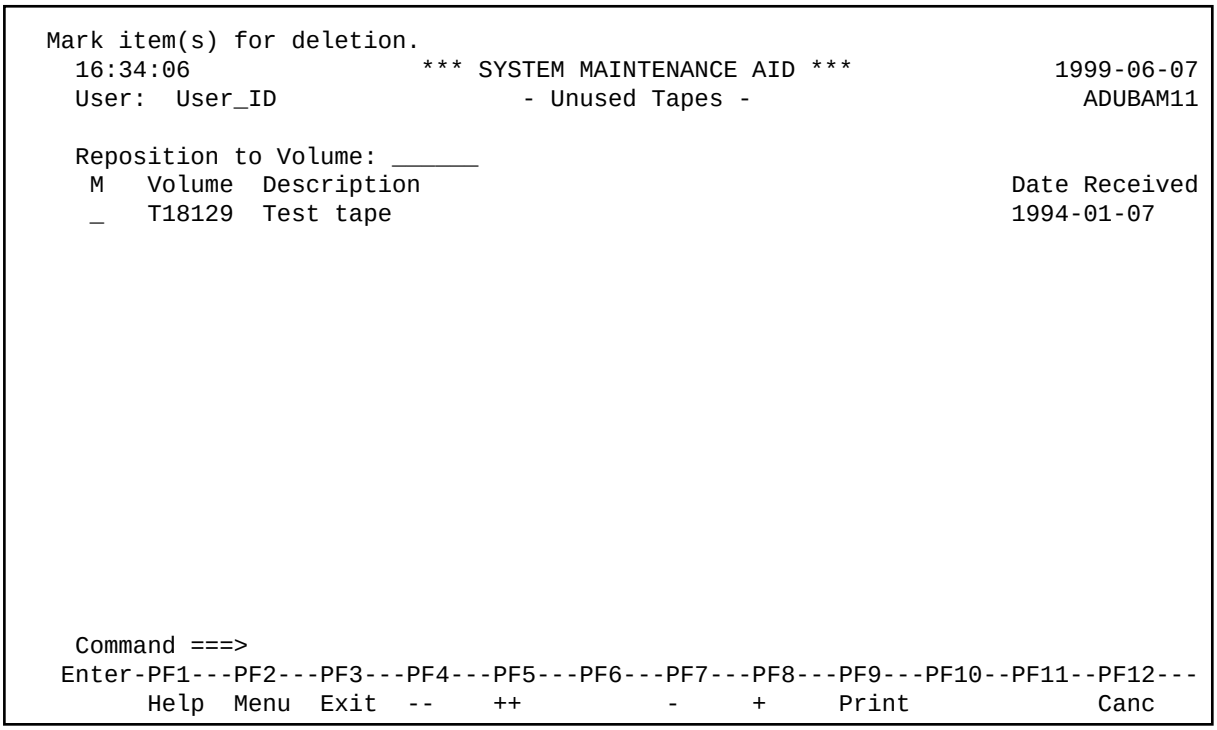
- product description
- linkage of products into environment
- product datasets
- ZAPs and source changes belonging to deleted product datasets.

After marking one or several products with an "X", the user is prompted to confirm the deletion.

Unused Tapes

When this function is selected from the "Administration" screen, the list of unused tapes is displayed.

Example screen:



In this list, the user may mark one or several tapes for deletion. Since only the tapes are shown for which all product datasets have already been deleted, the only information remaining for deletion is the tape record and the "READ ME" texts for these tapes.

After marking one or several tapes with an "X", the user is prompted to confirm the deletion.

Direct Commands

The commands described in this section activate processing, and are available both in online mode and in batch mode.

The following topics are covered below:

- General Information
- Setting Parameters and Values for Subsequent Processing
- Marking Products for Installation
- Changing the Values of Stored Parameters
- Copying a Correction
- Copying an Environment
- Cloning an Environment
- Renaming an Environment
- Starting JCL Generation
- Deleting Generated Jobs
- Committing New Values
- Loading Table Data from Software AG Delivery Tapes
- Printing Reports
- Executing Natural Commands
- Working with Datasets
- Unloading Generated or Saved Jobs
- Unloading JCL Skeletons and Parameters
- Copying Generated Jobs
- Adding a Product Definition
- Commands for Dialog Control

General Information

Like most Software AG products, SMA can be used either in a menu-driven way or by entering direct commands.

In dialog mode, these commands can be entered in the command line at the bottom of each screen. Maximum length is 60 bytes.

In batch mode, the commands are input for the program MENU. The maximum length is 80 bytes. To continue over several command lines, use the continuation character **%**. They will be replaced by blanks before execution.

The following input in the command line is always valid:

- A period (.) has the same effect as PF3, that is, it returns to the previous menu.
- A two digit number from 01 to 12 has the same effect as the corresponding PF key.

The commands have the following syntax:

<function> <object-type> <object> <additional values>

Not all functions are implemented for all object-types. The following topics describe the valid command combinations.

Setting Parameters and Values for Subsequent Processing

SET ENVironment <environment-name>

This command selects the environment in which subsequent commands will operate. If the specified environment does not exist, an error message will be displayed.

SET PRINT-SIZE <number-of-lines>

This command defines the page size for reports.

SET LANG <language-code 1 or 2>

This command sets the language code for the SMA dialog (1 = English, 2 = German).

SET PRINT-ID

This command sets the printer ID for reports and print functions.

SET LOAD VOLser <VOLser>

This command influences all subsequent LOAD operations during this run; the original serial name of the tape will be replaced in the SMA table data with the new name. This can be useful if the Software AG delivery tape has to be copied to a new tape, due to local data center regulations.

Marking Products for Installation

INstall <product> <environment>

With this command, the specified product is marked as "to be installed". Installation JCL for this product will be generated by the next JCL generation step.

The product is specified using six characters, including the version number (for example, NAT234).

If an asterisk (*) is specified instead of a product name, all products available in this SMA file are marked as "to be installed".

If <environment> is omitted, the environment specified with the last SET ENV command is taken.

Changing the Values of Stored Parameters

MOdify PARameter <environment> <parameter-name> <value>

This command sets the new value for the specified parameter. If <environment> is omitted, the environment specified with the last SET ENV command is taken.

MOdify PARameter GLOBAL-PARMS <parameter-name> <value>

This command modifies the value of a global parameter (see Global Parameters in the section Menus and Line Commands).

MOdify GLOBAL <parameter-name> <value>

The following parameters can be specified as GLOBAL parameters: PRINT-SIZE and PRINT-ID.

The meaning of these parameters is the same as documented for the SET command (see Setting Parameters and Values for Subsequent Processing earlier in this section). In contrast to the SET command, which sets the values for the current session only, the values specified with the MODIFY GLOBAL command are stored permanently.

Copying a Correction

COPY ZAP <old-correction-number> <new-correction-number>
<operating system> <new symbolic dataset name><modify y/n>

An existing correction is copied under a new name (e.g., for a different dataset). If "y" is specified for the last parameter, all occurrences of the old correction number are replaced by the new correction number in the correction text.

Copying an Environment

COPY ENV <old-environment-name> <new-environment-name> <text>

This command copies an existing environment. The <text> will be used as the first line of explanatory text for the new environment. The new environment becomes the current one for subsequent commands.

Renaming an Environment

REName ENV <old-environment-name> <new-environment-name> <text>

This command renames an existing environment. The <text> will be used as the first line of explanatory text for the new environment. The new environment becomes the current one for subsequent commands.

Starting JCL Generation

GENERATE <environment>
GENerate TAPE <tape>
GENerate ZAPS <lib-group>

JCL generation is started for the selected environment. If <environment> is omitted, the environment specified with the last SET ENV command is taken.

The generated JCL lines will be written into the SMA database and into work file 2. The JCL lines on workfile 2 contain additional lines at the beginning of each job, enabling the separation of the sequential file into a source library. In OS, this separation is done by the standard IEBUPDTE utility program.

Please see member JCLGEN in the source library when running these commands in batch.

The command GEN TAPE or GEN ZAPS starts JCL generation for copying marked datasets from tape to disk or for applying ZAPs, respectively. Copy steps are generated for the tape specified or for all tapes if <tape> has been omitted.

Application of ZAPs is generated for the specified library group only.

Deleting Generated Jobs

DElete JOBS <environment>

The JCL generator checks that no generated jobs are stored for this environment. This check ensures a meaningful order of JCL generation and execution.

The user may circumvent this check by deleting all jobs stored in the specified environment using this command.

Committing New Values

SET-INSTALLED <environment>

This command changes the status of products from "to be installed" to "installed" and the status of new parameter values to "installed" values.

This command is executed by the last generated job in an installation sequence. It can also be called directly to document the status of the parameters and installed products in an existing environment.

SET-COPIED
SET-COPIED TAPE <tape>
SET-COPIED LIB-GROUP <library-group>

This command resets the status "to be copied" for all datasets (first format), for the datasets of the tape specified, or for the datasets of the library group specified.

SET-APPLIED LIB-GROUP <lib-group>

This command changes the status from "to be applied" to "applied", and from "to be undone" to "undone" for all ZAPs in the named library group.

Loading Table Data from Software AG Delivery Tapes

LOAD

With this command, Software AG product tapes are made known to SMA. Control data is read from workfile 1, converted, and stored in the SMA database. Workfile 1 of Natural must be assigned to the first dataset on a Software AG SMA delivery tape.

Printing Reports

REPort ENVironment <environment>

This command prints a report of the selected environment. The environment description, list of installed products (when, by whom, etc.) and parameter settings are printed.

If <environment> is omitted, the environment specified with the last SET ENV command is taken.

REPort TApe <tape-volume-serial-number>

Detailed information on tapes, tape description texts and datasets on tape is printed.

If <tape-volume-serial-number> contains an asterisk (wild-card), the corresponding group of tapes is selected.

REPort DAtasets <operating-system> <product>

This command prints a report of all datasets known to SMA, sorted by product names.

If <product> contains an asterisk (wild-card), the corresponding group of products is selected.

REPort PARM <environment> <parameter-group>

This report shows all available parameters, their explanations and their current values in the specified environment. This report should be used when preparing to install Software AG products with SMA.

The specification of the parameter group is optional. If it is given, then only the parameters of this group are shown.

REPort VALue<parameter> <parameter-group>

This report shows the values of all parameters contained in the specified group.

The specification of the parameter group is optional.

REPort JCL <skeleton-name>

This report shows the JCL skeleton, and lists the parameters occurring in this skeleton. When used in batch, the command SET ENVIRONMENT must be entered first, for example:

```
LOGON SMA1
MENU
SET ENVIRONMENT OS/MVS
REPORT JCL ADALOD5
```

REPort ZAP-APPLIED <from> <to> <operating-system>

This report gives an overview of the ZAPs applied, sorted by ZAP number, including the information where, when and by whom the ZAPs were applied.

REPort ZAP-LIST <from> <to> <operating-system>

This report contains the source lists of the ZAPs applied in an environment.

REPort ZAP-LIBS <dataset-name>

This report gives an overview of the ZAPs applied sorted by libraries.

REPort RESOURCES <environment>

This report lists "resources" created by internal jobs. Resource types are:

- Adabas files
- Source members
- Load members

Executing Natural Commands

Natural <text>

The text is passed directly to Natural for interpretation as a direct command of Natural itself.

The following Natural commands may be entered directly, without the preceding NAT command:

- SYS... each command starting with SYS
- EDIT
- EX or EXECUTE
- FIN
- GLOBALS
- LOGON

Working with Datasets

ADD DATASET <symbolic-dataset-name> <library-group-name> <op.-system>

A record for a new copy of the specified dataset is entered into the specified library group. The specified dataset must exist, but not yet in this group.

DEL DATASET <symbolic-dataset-name> <library-group-name> <op.-system>

The table entry describing the copy of a dataset (library) is deleted. The record pointing to the Software AG delivery group cannot be deleted.

Note that this command does not delete the dataset itself; only SMA’s table entry for this dataset is deleted.

SET TO-BE-COPIED
<symbolic-dataset-name> <library-group-name> <operating-system>

This command sets the status "to be copied" for the dataset specified.

Unloading Generated or Saved Jobs

UNLOAD JOBS <environment>

All generated jobs stored under the given environment are written into Natural workfile 2. Control records for the corresponding library utility (IEBUPDTE, LIBR) are also written.

UNLOAD SAVED <Group-Name>

All saved jobs stored in the given group are written to Natural work file 2. Control records, for the corresponding library utility (IEBUPDTE, LIBR), are also written.

UNLOAD ZAP NAMED <zap-number> <op-sys>

The specified ZAPs are written to Natural work file 2.

In <zap-number> *-notation can be used. Control records for the corresponding library utility (IEBUPDTE, LIBR) are also written.

UNLOAD ZAP FOR <symb.DSN> <op.sys>

The ZAPs belonging to the specified dataset are written to Natural work file 2. Control records for the corresponding library utility (IEBUPDTE, LIBR) are also written.

UNLOAD TABS-JOBS <environment-name > AS <new-env-name>

This command is similar to the UNLOAD JOBS command. The output, however, contains control commands, so that it can be loaded into this SMA file or a different one, via the command LOAD.

The AS <new-env-name>portion of the command is optional.

UNLOAD TABS-SAVED <group-name > AS <new-grp-name>

This command is similar to UNLOAD SAVED. The output also contains control commands, so that using the command LOAD, it can be loaded into this SMA file or a different one.

The AS <new-grp-name>portion of the command is optional.

UNLOAD TABS-ZAP NAMED <zap-name> <op.sys>

This command is similar to the UNLOAD ZAP NAMED command. The output contains control commands, so that it can be loaded into this SMA file or into a different one, via the command LOAD.

UNLOAD TABS-ZAP FOR <symb.DSN> <op.sys>

This command is similar to UNLOAD ZAP FOR. The output contains control commands, so that it can be loaded into SMA via the command LOAD.

Unloading JCL Skeletons and Parameters

UNLOAD TABS-JCL <environment-name*><JCL-skeleton-name*>

This command is used to unload JCL-skeletons from the default environment as well as from the user environments (an asterisk notation is possible). The output, however, contains control commands, so that it can be loaded into this SMA file or a different one, via the command LOAD.

UNLOAD TABS-PRPARM <operating system><Symbolic-Parameter-name*>

This command is used to unload parameter descriptions (an asterisk notation for the parameter-name is possible). The output, however, contains control commands, so that it can be loaded into this SMA file or a different one, via the command LOAD.

UNLOAD TABS-PPVALUE <environment-name*><Symbolic-Parameter-name*>

This command is used to unload parameter values from the default environment as well as from the user environments (an asterisk notation is possible). The output, however, contains control commands, so that it can be loaded into this SMA file or a different one, via the command LOAD provided the corresponding parameter description has already been loaded.

Copying Generated Jobs

COPY JOBS <environment-name> [<to-group-name> [<job-prefix>]]

This command is used to copy generated jobs into the Saved Jobs area.

If to-group-name is not specified, then the environment-name is used by default. If both environment-name and to-group-name are specified, then a maximum of four characters can be used as a prefix for the job-names.

Adding a Product Definition

ADD PRoduct <product> <operating-system> <product-long-name>

This command adds a product definition.

<product> must be six characters long. In order to avoid conflicts with Software AG’s product short names (three letters followed by three figures), a different naming convention should be used.

This command may be useful for documentation purposes when a system which is not supported by SMA is installed in an environment.

Note that SMA cannot generate JCL for the installation of this type of product.

Commands for Dialog Control

The following commands can be used to access a menu function directly without having to return to the main menu first.

T

The window "select dataset access method" will appear.

This is the same as entering "T" in the Main Menu.

T VOL

The tape selection list will appear.

T VOL <volume> <line-cmd>

The <line-cmd> will be applied to the specified volume.

Example:
If you enter the following, a list of datasets on this tape will be shown:

```
T VOL T21088 DA
```

T PROD

The product selection list will appear.

This is the same as first entering "T" in the Main Menu, and then selecting "product".

E

The environment selection list will appear.

This is the same as entering "E" in the Main Menu.

E <name>

The environment selection list will appear, positioned to the specified environment.

E <name> <line-command>

The line command will be applied to the specified environment.

Example:
If you enter the following, you will see the "Modify Environment" window for environment TESTENV:

```
E TESTENV MO
```


Z

The library group selection will appear.

This is the same as entering "Z" in the Main Menu.

R

The Report menu will appear.

This is the same as entering "R" in the Main Menu.

The report commands as documented earlier will bring you to the corresponding locations.

A

The administration menu will appear.

This is identical to entering "A" in the Main Menu.

A PARAM

Jump to "Global Parameters".

A SAVED

Jump to "Saved Jobs".

A PROFile

Jump to "SMA Profile".

A TABLoad

Jump to "Tabload".

A PRODucts

Jump to "Unused Products".

A TAPE

Jump to "Unused Tapes".

A IUPD

Jump to "Unused IUPDs".

A LIB-group

Jump to "Unused Lib-groups".

Using the Editor and Help Facility

This section provides the following information:

- Editor
- Help Facility

Editor

The Natural editor is called in SMA's dialog at several points (e.g., when modifying JCL skeletons, modifying generated jobs, adding a ZAP).

This editor is used with two kinds of commands:

- editor commands, entered in the command field at the top of the screen
- line commands, entered at the beginning of the text lines. Line commands start with a comma (,) (to distinguish them from some JCL lines starting with a period).

The following line commands are available:

Line Command	Description
,x and ,y	mark lines
,cx or ,cx-y	copy the marked lines
,mx or ,mx-y	move the marked lines
,d	delete this line
,i	insert a new line after this line

The following editor commands are available:

Editor Command	Description
- -	scroll to top of text
-<number>	scroll backward by this number of lines (e.g., -22)
++	scroll to bottom of text
+<number>	scroll forward by this number of lines (e.g., +9)
save	save the current state of the source
scan	scan without a parameter invokes the scan and replace function
scan <text>	searches for the specified text
dx-y	delete marked lines
sub	submit the job (only valid when editing generated JCL)
delete	delete JCL skeletons in user environments
print	print this text

The editor is left by pressing PF3. If changes have been made, but not saved, SMA asks the user whether to leave the editor with or without saving.

Help Facility

The Help texts for SMA are separated into chapters. An Index/Directory shows all the titles of these chapters.

If the user presses PF1 at any point in the dialog, the appropriate chapter of Help text will be displayed, if the cursor is on the command line. The user can browse forwards in this chapter, and move on to the next one.

By pressing PF9 (DIR), the Help Directory is displayed. The user can select any topic, including the chapters which describe general aspects of SMA and are not tied to specific functions.

Field sensitive Help is available on many maps, as well. This field sensitive Help can be displayed if the user presses PF1, while the cursor is on this field.

JCL Skeletons

This section provides the following information:

- JCL Skeleton Details
- Changing JCL Skeletons
- Creating User Parameters and Skeletons

JCL Skeleton Details

The following topics are covered below:

- Formal Parameters in JCL Lines
- INCLUDE
- Properties of Datasets
- Special Parameters
- Conditional Selection of JCL Steps and Lines
- Elementary Conditions
- Complex Conditions

Formal Parameters in JCL Lines

This section describes all formal parameters which can be used in JCL lines.

Those formal parameters are denoted by two "#"-signs. The first character denotes the type of the parameter.

The skeletons contain JCL text mixed with formal parameters. These formal parameters are replaced during JCL generation with current values.

The following formal parameters are provided:

Formal Parameter	Description
#V-<name>#	These are the environmental parameters. Refer to report "Parameters" for a list of all parameter names.
#G-<name>#	These are the global parameters. Supply values to these parameters using "Global Parameters", in the "Administration" menu.
#I-.....#	Include another selection. See below.
#D-.....#	Properties of datasets, like name on tape and disk, etc. See the following list of options.
#P-.....#	SMA-internal parameters. These parameters **must not** be changed.
#S-.....#	Special parameters. See the list of options that follow.
#T-nnn#	T- followed by a number sets the "print position" where the next character is to be placed in the line. This feature is needed, if characters following other parameters are to appear on fixed positions.

INCLUDE

Format-1: #i-<skeleton-name>#
Format-2: #i-p-<PIPARM-name>#

This statement can be used within a skeleton. It must be placed at the beginning of a line. It causes (Format-1) to include the named skeleton at this point in the "calling" skeleton.

Such includes may be nested; i.e., the named skeleton might in turn contain a #I-...#.

The skeleton name may include a product name, with &&& instead of the version number. The &&& is replaced by the installed version of this product.
This feature is used for the Natural link, for example:

```
#I-INCL-NAF&&&#: if 234 is the version of NAF which is to be installed or is
installed, then skeleton INCL-NAF234 will be included at this point.
```

In format-2 the Include statement contains the name of an SMA-internal parameter. In this case the value of this parameter is first evaluated, and then this value is taken as the name of the skeleton to be included.

Properties of Datasets

Format: #d-<attrib>(<dataset>)#

The D-... parameters reference certain attributes of datasets. Two specifications are needed within these parameters; what attribute for which dataset.
The following constant texts are possible values for the <attrib> part of these parameters:

Constant Text	Description
DSN-D	Dataset name on disk (if on disk)
DSN-T	Dataset name on tape
VOL-D	Volser of the disk the dataset is on
VOL-T	Volser of the tape the dataset is on
LBL	Label number on the tape
LBL3	(Label number 1) * 3 (for VSE/SP)
N-BLK	Number of blocks
RECFM	Record format
BLKSZ	Block size
LRECL	Record length
DSORG	Dataset organization (see below)
D-BLK	Number of Directory blocks (if it is a library)
D-T-C	Date and Time of Creation
DEV	Device type of the disk, if on disk; or of the tape, if not on disk
SPACE	Text of the space allocation parameter

There are the following options for the <dataset> - part:

- Symbolic dataset name (e.g., NAT234.LOAD)
- Symbolic dataset name, with &&& instead of the version number.
  This denotes the installed version of the respective product.
- SMA internal parameter (e.g., P-DSN)

Examples for the use of these features are:

```
Library-Names in Link-edit steps:
  //... DD DSN=#D-DSN-D(NAT&&&.LOAD)#,DISP=SHR
  //... DD DSN=#D-DSN-D(CNT&&&.LOAD)#,DISP=SHR

General Copy-Skeleton Tape to Disk:
  //SYSUT1 DD DSN=#D-DSN-T(P-DSN)#,DISP=(OLD,PASS),
  //           VOL=SER=#D-VOL-T(P-DSN)#, ....
```


Special Parameters

 # S-<keyword>#

This is a sequence of special parameters with fixed meaning:

Special Parameter	Description
S-JOB	Job ID from the PIN entry
S-DESC	Job description for this Job-ID
S-DATE	Date of job generation
S-TIME	Time of job generation
S-SEQ	Sequence number of the step
S-FNAT	FNAT for current SMA dialog
S-FUSER	FUSER for current SMA dialog
S-FDIC	FDIC for current SMA dialog
S-FSPOOL	FSPOOL for current SMA job generation
S-ENVIRON	Environment name, where JCL is currently being generated.
S-SMALIB	Library of SMA itself
S-DBID	DBID for current SMA dialog
S-SMA-LFILE	LFILE specification for SMA data.
S-REP	Index value of repetition factor.
S-REPZ	Like S-REP, but with one leading zero.
S-PROD	Name of the product, where this step belongs to.
S-PRODNAM	First three (3) characters of S-PROD
S-PRODVER	Last three (3) characters of S-PROD
S-PINISN	ISN of the control record of this step
S-IGCNUM	Computes number for the IGC-name in the SVC-install for MVS. Input is from #V-SVC#.
S-TRK (<Cylinder>,<Unit>)	<Cylinder> and <Unit> are Prod-Parameters (but without "v-"). The whole expression delivers the number of tracks for the given number of cylinders on the given device.

Conditional Selection of JCL Steps and Lines

The generation of a JCL line can be made dependent on the evaluation of simple or complex conditions. These conditions can be modified after using PF11 during edit of the JCL skeleton.

Elementary Conditions

The elements which can be used in these conditions are:

Element	Description
BATCH	Use this JCL line only when writing the generated JCL to a work file (this is only in batch). The statements used to separate the work file should be marked with this condition.
ONLINE	Use this JCL line only when writing the JCL to the SMA database.
TAPE	Use this JCL line only when the dataset which was last used in a #D-...# parameter does not reside on disk. Through this condition SMA can adapt generated JCL to datasets being on tape or disk.
DISK	Analogous to TAPE.
SECU	Use this line only, if Natural Security is already installed.
<pppnnn>	Use this line only if the product pppnnn is installed or marked to be installed. The version numbers in the product names can be left out (e.g., ADA623, ADA6 or ADA are all acceptable).
=<pppnnn>	Use this line only if the product pppnnn is marked as to be installed or is installed, **but** do not use it, if it is installed and another version of the same product is "to be installed".
><pppnnn>	Example: >NAT23. Use this line only if the product pppnnn or a higher version is marked as to be installed or is installed, **but** do not use it, if it is installed and a lower version of the same product is "to be installed".
<<pppnnn>	Example: <NAT23. Use this line only if the product pppnnn or a lower version is marked as to be installed or is installed, **but** do not use it, if it is installed and a higher version of the same product is "to be installed".
$<pppnnn>	Use this line only if the product pppnnn is marked as to be installed and is **not** installed before this.
#<parm>	The parameter with the given name is searched in the current environment. If it has a current value different from NO, N or blank, the JCL line is selected.

Complex Conditions

Product and variable names can be combined to complex conditions using opening and closing brackets, and the operators:

+	Or:	Use the JCL line if at least one of the "or-" conditions are true.
*	And:	Use the JCL line if all "and-" conditions are true.
^	Not:	Use the JCL line, if the condition is not true.

The rules for combining the elementary conditions using these operators follow the usual conventions. No blanks are allowed within the condition. Maximum nesting of expressions is 6.

Examples of legal expressions are:

```
^CNT              Use this line if CNT is not installed

NAF*PCM*AOS       Use this line if NAF, PCM, and AOS are all installed

PCA+NDM+(^CNT     Use this line if either PCA or NDM is installed,
                  but not CNT.
```


Changing JCL Skeletons

Skeletons may be modified or replaced by the user or by Software AG. A skeleton will be replaced by Software AG when the tables on a new product tape contain a revised version of an existing skeleton. This may be necessary due to new requirements for new products.

The LOAD program will replace skeletons in the default environment, but will not replace skeletons which have been modified by the user, in a user environment. In both cases, the user will be informed by a warning message.

To avoid conflicts, the user should change only the skeletons which will not be changed by Software AG. These skeletons are described in the following sections:

- Job Card
- Adabas Files
- COPY Steps
- Skeleton SMA-COMMIT
- Skeleton ZAP-COMMIT
- Natural Parameter Modules
- INCLUDEs for Linking Natural

Job Card

Operating System	Skeleton Name
OS/MVS	JOB-CARD
VSE/SP	JOB-INIT
BS2000	not used

Adabas Files

Operating System	Skeleton Name
OS/MVS	ADA-FILES
VSE/SP	ADAFILES
BS2000	not used

For OS/MVS:

This skeleton contains the DD-statements for the files of the Adabas databases. SMA assumes the following naming convention for these datasets:

<common-prefix>.ASSOR1
<common-prefix>.DATAR1
<common-prefix>.WORKR1
<common-prefix>.SORTR1
<common-prefix>.TEMPR1

This skeleton may be modified if the user wishes to apply a different naming schema.

For VSE/SP:

This skeleton contains a PROC definition including all ASSGN, DLBL, and EXTENT statements needed for the files of the Adabas database. This PROC will be used in many installation jobs. If the user's requirements differ from the assumptions made by SMA, the definition of the PROC must be changed.

COPY Steps

The skeletons named COPY-... are used when copying from tape to disk. Special tape handling procedures can be included here. The following copy skeletons are available:

Skeleton	Operating System	Description
COPY-PS	OS/MVS only	Copy a sequential dataset
COPY-PO	OS/MVS only	Copy a library
COPY-PS-SUB	VSE/SP only	Copy a library with sublibraries for core, relo, and source member
COPY-SAM	BS2000 only	Copy an SAM file
COPY-PAM	BS2000 only	Read a file from tape, and create a library or a program (PAM files) on disk
COPY-LMS	BS2000 only	Read a file from tape (LMS input stream) and create a library on disk

Skeleton SMA-COMMIT

The final installation step, which informs SMA that all jobs have been completed successfully, runs in an existing Natural environment and not necessarily in an environment created by SMA. Therefore, it is normally necessary to adapt this skeleton to the existing environment. Ensure that "Global Parameters" (see Global Parameters in section Menus and Line Commands) are used in these skeletons.

Skeleton ZAP-COMMIT

The skeleton ZAP-COMMIT needs to be modified to the existing environment. This skeleton is used to generate the last step in the jobs which apply or "undo" ZAPs. Modify this skeleton in your default environment (OS/MVS, VSE/SP or BS2000). Ensure that "Global Parameters" (see Global Parameters in section Menus and Line Commands) are used in these skeletons.

Natural Parameter Modules

A number of values in the generated Natural parameter modules can be set in the "Modify Environment" part of SMA. These are, in particular, the file numbers and the different "sizes". Some other parameters are generated with fixed values.

The user can set parameters in the skeletons NAT-USER-PARM-BATCH, NAT-USER-PARM-CICS, etc. These skeletons will not be replaced by Software AG with later product deliveries (whereas skeleton NATPARM could be changed by Software AG for new products).

The skeleton NAT-USER-NTSYS contains example NTSYS definitions. These definitions may be adapted by the user.

If the user wants to add members in the CSTATIC list of the Natural parameter module, they must be entered in the skeleton NAT-USER-CSTATIC-TSO, or NAT-USER-CSTATIC-BAT, etc.

The following shows how these various skeletons work together to form the Natural parameter modules for batch or online:

Skeleton NATPARM:

```
TITLE 'NATURAL PARAMETER MODULE'          Start of NTPRM
NTPRM
  .
  .                                       Software AG-owned NTPRM-parameters
  .
  .
CSTATIC=(...
  .
  .                                       Software AG owned CSTATIC-lines
  .
include skeleton NAT-USER-CSTATIC         User-owned CSTATIC-lines
  ...),
  .
  .
  .
include skeleton NAT-USER-PARM...         User-owned NTPRM-parameters
  .
  .
  .                                       Last line of NTPRM
include skeleton NAT-USER-NTSYS           User-owned NTSYS-spcecifications
  .
  .
  .
  .                                       Software AG owned NTFILE- and NTDB-
lines
  .
  .
  .
END                                       End of source module
```

INCLUDEs for Linking Natural

The INCLUDE structure of Natural depends on the combination of products to be installed; this is considered by SMA.

If the user wants to add his/her own modules, he/she may enter the appropriate INCLUDE lines in the skeleton NAT-USER-INCLUDE, and if necessary, he/she may enter DD statements for additional libraries in the skeleton NAT-USER-OWN-LIBS.

Creating User Parameters and Skeletons

When SMA is used intensively, it may be desirable to introduce specific parameters or skeletons.

To introduce specific parameters or skeletons

1. Create a work file (a member) containing input in SMA LOAD format, defining the new parameters and skeletons.
   This file must consist of 80 byte records, and can be created using any standard source editor.
   The last record must be a comment line.
2. Run the SMA LOAD Utility, using the file created in Step 1 as work file 1.

Comments

Comment Lines:

##***	Commentary, no data in SMA loaded. Use frequently, for better readability of the table input members.

JCL Skeletons

The lines following the ##JCL line, until the next ## line, form the JCL skeleton.

##JCL, <function>, <environment>, <change-allowed>, <version>, <text>

Parameter	Description
<function>	Name of the JCL skeleton, as used in #i-... # . Maximum name length is 18 characters.
<environment>	Name of the default operating system.
<change-allowed>	Always "Y".
<version>	A version date of this skeleton, as a 8 digit number in the form yyyymmdd, is optional. If a version is present, the loader will load the skeleton only if it is newer than the existing one.
<text>	Explanatory text for the skeleton. Maximum length is 72 characters.

The name of the skeleton should always start with "CUSTOMER-...", in order to avoid conflicts with Software AG’s supplied skeletons.

Environmental Parameters

The definition of a environmental parameter is done in two to six lines. The first line contains the values specified below, the second line contains possible values for this parameter, separated by a comma. The following four lines are stored as explanatory text for this parameter.

The loader takes the first of the possible values and includes it as a default value in the all environment, where thus far no value existed. If a value exists for this parameter, then this value remains unchanged.

##PRPARM, <operating-system>, <parameter-group>, <parameter-name>, <change-allowed>, <Alpha or Numeric>, <Min.Value>, <Max.Value>

If the parameter has the type A (Alpha), then <Min.Value> and <Max.Value> denote the minimum and maximum lengths.

The parameter group should always be "CUSTOM", and the parameter name should always start with "CUSTOMER-..." in order to avoid conflicts with Software AG's supplied parameters.

Parameters introduced by customers in this way, can be used in any skeleton.

Example

The following is a full example how this can be used in OS/MVS:

1. Define Paramter CUSTOMER-DEPT and Skeleton CUSTOMER-JC
   Create the input file for SMA LOAD using a normal source editor:

```
##PRPARM,OS/MVS,CUSTOM,CUSTOMER-DEPT,Y,A,1,32
F-OD
DEPARTMENT OF DATA CENTER OWNING THIS SMA ENVIRONMENT
##JCL,CUSTOMER-JC,OS/MVS,Y,,ADDITIONAL JOB-CARD LINES
//* ------------------------------------------------
//* SOFTWARE AG INSTALLATION JOB.
//* OWNER: #V-CUSTOMER-DEPT#
//* ------------------------------------------------
##*** COMMENT LINE: MUST BE THE LAST LINE
```

2. Load the definition created in Step 1 into an SMA file
3. Use the definition in an existing skeleton JOB-CARD:
   Add a line #I-CUSTOMER-JC# at the end of the skeleton.

The JCL generator will extend the job cards using the skeleton CUSTOMER-JC in all subsequent generations.

SMA Data Topics

This section provides the following information:

- Default Copying
- Sequence of Generated Jobs
- Parameters for New Products
- Important BS2000 Parameters

Default Copying

During JCL generation, SMA must be able to find the datasets. Therefore, all copy steps for Software AG's installation datasets must be controlled by SMA.

The JCL generator inspects the descriptions of the datasets and produces copy steps to copy all libraries from tape to disk which have not yet been copied.

SMA makes some assumptions about copying. These are based on the library group parameters.

- Dataset names (DSNs) for datasets on disk are created by concatenating the default DSN prefix, which is stored in the parameter LIB-GROUP, with a period (.) and the DSN as it is stored on tape. For example, if the value of the parameter LIB-GROUP is SAGLIB, the name of the Natural load library will be SAGLIB.NAT234.LOAD.
  If the last character of the LIB-GROUP parameter value is an asterisk (*), the period and the asterisk will be omitted in the dataset name on disk.
- The name and device type of the disk are taken directly from the parameter LIB-GROUP-VOLSER or LIB-GROUP-UNIT, respectively.
- The space allocation is computed based on the dataset size. In OS/MVS, the type of space allocation (block, track, cylinder) is selected depending on the value of the parameter LIB-GROUP-ALLOTYPE.

Creation of Library Copies

The first phase of the JCL generator determines which libraries have to be copied. A library is copied from the delivery library if:

- it does not exist according to the current value of the LIB-GROUP parameter, and
- it belongs to a product which is installed or to be installed in this environment.

At this point, the JCL generator enters the default dataset names, etc., as described above, into the list of dataset names. These entries are marked as "to be copied". The creation of a copy entry is normally done by the JCL generator. If the user wishes to control this copy process, he/she must proceed as described in Controlled Copying in the section Using System Maintenance Aid.

Sequence of Generated Jobs

Four groups of jobs are generated (xxx represents a three-digit number):

- T*xxx:* Tape copy jobs. These jobs copy the libraries and the marked datasets. One job is generated per tape.
- P*xxx:* Preparatory jobs. These jobs perform preparatory tasks for the installation.
- I*xxx:* Installation jobs. The last Ixxx job changes the status of products and parameters from "to be installed" to "installed".
- Other jobs are example jobs, which might be useful to the user, but are not part of the product installation.

The jobs are generated in the sequence given in the following table.

Job Name	Description
P010	Create the SAGLIB
P020	Define/restore libraries/sublibraries
P040	Catalog procedures
P060	Preparation instructions
P080	Delete/define VSAM clusters
I003	Create conversion jobs
I005	Update CICS tables
I006	Update CICS tables with utility
I008	Allocate datasets
I009	Copy datasets
I010	Install permanent ADASVC
I011	Install temporary ADASVC
I020	Adabas IOR parameters and defaults
I025	Com-plete installation steps
I026	Com-plete migration steps
I030	Define and format the Adabas database
I040	Start the Adabas nucleus
I050	Load Adabas files into database
I051	Migration job
I052	Define VSAM datasets
I053	IMS PSB/DBD/ACB generation
I054	Assemble NATPARM if common for batch/online
I055	Preparations for linking batch Natural
I056	Auxiliary assembly jobs
I060	Assemble NATPARM and link batch Natural
I061	Load Natural applications with INPL
I065	Example jobs to test NATBAT
I070	Preparations for linking online Natural
I075	Auxiliary jobs online Natural
I080	Assemble NATPARM and link online Natural
I081	Initialize VSAM roll files
I082	Migration job
I088	Link the Adabas Link modules
I090	Catalog thread part into Com-plete

Job Name	Description
I100	Setup and installation verification
I200	Setup jobs
I500	Migration jobs
I999	SMA: commit environment, tapes and/or library corrections; generate Environment Report
E100	Load example jobs
E600	Predict migration steps
Z010	Apply ZAPs
Z020	Load corrections with INPL

Note:
This table does not contain the complete list of jobs. New jobs may be introduced when the need arises.

Generated Steps

SMA generates the steps which are necessary in a given situation, based on the following conditions:

- The step belongs to the installation sequence of a product which is to be installed.
- The step contains lines which are dependent on a product which is to be installed.
  Example: Many subproducts of Natural affect the Natural parameter module. Thus, this parameter module will be generated whenever such a subproduct is installed.
- The step contains parameters which have a new value.
  In some cases, too many steps will be generated (for example, when changing the name of the batch Natural nucleus or the name of the assembler), because SMA cannot decide whether changing a parameter requires the re-execution of the corresponding step.
- The step is a logical successor of a step already selected.
  Example: A new parameter module must be assembled; afterwards, Natural must be linked.
- The step is a logical successor of a ZAP or source change.

Parameters for New Products

When running LOAD for a new product delivery tape you will get a report on which new parameters have been loaded. This can be used to prepare the installation of a new product.

Before installing any product you should inspect parameter group OPTION. These parameters give the user control over how a product is installed.

Typical OPTION parameters are:

NAT-FIRST-INSTALL	This parameter must be set to "Y" if the product is installed for the first time. In this case, more installation steps may be needed than otherwise.
SAG-EDITOR	Install the Software AG editor when installing Natural.

The list of OPTION parameters grows dynamically as new products are loaded into SMA. Thus, it is not possible here to document a complete list. Make sure you inspect the parameters currently available here.

Important BS2000 Parameters

The parameters mentioned in this section control the adaptation of the jobs to BS2000.

- Parameter LMS
- Parameters JOBLIB / REPLIB / ENVMOD / SMALIB
- SMALIB
- Parameter JV
- Parameters PASSWORD / FILEATTR

Parameter LMS

LMS must be set to YES.

The name of the LMS phase (for example, LMS=$TSOS.LMS) must be specified.

If LMS=$LMS (using LMS):

- Module, macro and source libraries are created using LMS.
- All generated JCL (jobs, procedures, data files) is stored in LMS library <joblib> and are started like /E joblib(E.I061).
- All SYSOUT message files are stored in LMS library <replib> (see parameters JOBLIB and REPLIB below).

Parameters JOBLIB / REPLIB / ENVMOD / SMALIB

The parameter JOBLIB contains the name of the job library. This library contains:

- All jobs, procedures and data files generated by SMA.
- All modules which are assembled during the installation process (see parameter ENVMOD below).
  If LMS is not used: The modules are stored in an LMR library named <joblib>, all other files in separate SMA files named <joblib>.<membername>.
- If new JCL is generated and an old job library already exists from a former installation SMA will
  - erase all the old installation jobs (LMS type J, members with prefix E.)
  - add the new installation jobs
  - add or replace all other members

The library which is identified by parameter REPLIB contains all SYSOUT message files.

The library which is identified by parameter ENVMOD contains those modules that are needed in the production environment after the installation has terminated.

The user may specify the same value for the parameters JOBLIB, REPLIB and ENVMOD. You are recommended to choose short names for the libraries.

Note:
Some passwords may be found in the job library (not in REPLIB). This library should be protected against unauthorized access.

The LOGON user ID should be specified in the values of the JOBLIB and ENVMOD parameters, but not in the library specified in the parameter REPLIB.

Example:


```
JOBLIB=$INSTALL.J1
  REPLIB=R1
  ENVMOD=$PRODUCT.E1
```

SMALIB

SMALIB is used to store P.SMAHOME and additional D-members for Natural command sequence starting with SMA.

- P.SMAHOME has only one single procedure for all occasions that need SMA direct commands. It is called by P.JCLGEN, P.COMMIT, P.TABLOAD, and by online JCL generation. It is created in the environment where SMA is installed, and it is put into the library specified by parameter SMALIB/BASIC.
- To catalog SMALIB, SHARE=YES,RDPASS=... specify the READPASS word in parameter SMALIB/BASIC.
  In this case, SMALIB should not be equal to JOBLIB.
- In an environment without SMA: set parameter "SMALIB" to the name of the SMALIB where SMA is installed.
  In an environment without SMA, SMALIB should not be equal to JOBLIB.

Parameter JV

If job variables are to be used, JV=Y must be specified, else JV=N must be specified.

If the product JV (BS2000) is not available on the BS2000 host, JV=N must be specified.

In NATBS2B (contained in library NATnnn.SRC), the line beginning with &JV must be modified as follows:

&JV ... SETC ’ON’ ... if job variables are used.

&JV ... SETC ’OFF’ ... if job variables are not used.

The following consequences result from the above mentioned specifications:

If JV=Y:

- TSOSLNK and batch Natural are controlled via monitor job variables. The normal/abnormal end of each link run and batch Natural run will be reported in file L.REPORT.
- Restart jobs after error:
  The names of the current installation job and its current job step are written to a job variable. The name of this job variable is given by parameter V-SMAJV.
  If an installation job is interrupted (due to an error, /CANCEL command, etc.), it can be restarted without any modifications. The job will continue processing with the interrupted job step. If the job is not to be restarted, the job variable must be erased.
- Job variables are required for Automated Installation (in addition: parameter "RR" must be set to "Yes").

If JV=N:

- The user should read the job output of all TSOSLNK and batch Natural jobs to check whether the jobs terminated normally. File L.REPORT will only contain a message indicating that these jobs terminated.
- Before restarting an interrupted job, the job must be modified to ensure that it will start processing at the interrupted job step.
- Automated Installation cannot be used.

Parameters PASSWORD / FILEATTR

When copying files from the installation tapes to disk the user may want to protect the disk files against unauthorized access. Therefore, the parameters FILEATTR1, FILEATTR2 (parameter group BASIC) must be used. Their default values are:

FILEATTR1: access=read

FILEATTR2: share=yes

If the user protects any file by a password the installation jobs have to know it; therefore, parameter PASSWORD must be specified.

Using System Maintenance Aid

The following topics describe the basic tasks which arise when working with SMA:

- Maintaining and Adapting SMA
- Installing Software AG Products with SMA
- Maintaining Software AG Products with SMA

Maintaining and Adapting SMA

One of the goals of SMA is to generate JCL which need not be changed by the user after it has been generated. Therefore, all local standards must be entered into SMA **before** JCL generation; from this time on they will be valid for all future generation processes.

The following sections explain how to adapt SMA to your requirements:

- Step 1: Profile Options
- Step 2: Global Parameters
- Step 3: Parameters in the Default Environment
- Step 4: JCL Skeletons in the Default Environment
- Step 5: Committing Changes to your Default Environment

Step 1: Profile Options

Enter the "Administration" part of SMA from the Main Menu and select "SMA Profile".

The parameters which can be specified in the "SMA Profile" can apply to this session only, or they can be stored permanently.

Step 2: Global Parameters

Enter the "Administration" part of SMA, and select "Global Parameters". Enter the required values.

See Administration in the section Menus and Line Commands for additional information and an explanation of these parameters.

Step 3: Parameters in the Default Environment

In SMA, a large number of parameters can be modified. You should change certain values, especially the parameters BASIC and LIBGRP, in your default environment before creating your working environments as copies of this default environment. The name of the default environment corresponds to the name of the operating system (OS/MVS, VSE/SP, BS2000).

Preparation

If you wish to use SMA's reporting facilities for the task of changing parameters, enter the "Reports" menu of SMA, and request report "P" (Parameters) with printout. This report shows all the parameters and their explanations, and based on the printout, you can prepare the changes you want to apply.

If your system does not permit online printing, execute SMA in batch mode with the command:

REP PARM OS/MVS (VSE/SP or BS2000, respectively)

There is a second report on parameters available, showing the usage of a parameter during the installation. You may use this report to evaluate the effects of changing a parameter in detail.

This dependency evaluation is only generated when requested with a printout.

Parameter Modification

To modify parameter values, proceed as follows:

1. Enter the "Environment" part from the Main Menu and select your default environment using the line command MO.
2. In the list of parameter groups, select a group by marking it with an "X".
3. Enter your values for these parameters in the column labeled "New Value". SMA stores these new values temporarily when you press Enter.

The Adabas transaction time limit may be exceeded during the modification of large numbers of parameters. It is recommended to save your modifications frequently using the direct command SAVE.

Step 4: JCL Skeletons in the Default Environment

You may alter the JCL skeletons either in the default environment or in your working environment. Changes in the default environment apply to all other environments, and should be made now - before actually starting to work with SMA - wherever necessary.

To change JCL skeletons in the default environment, proceed as follows:

1. Enter the "Environment" part from the Main Menu and select your default environment using the line command MO.
2. Select "Modify JCL Skeletons" in the "Modify Environment" window. The list of available skeletons is displayed.
3. Choose a skeleton from the selection list and inspect its text.

When editing JCL skeletons, note the following:

The lines of the skeletons may contain conditions. These conditions are used by the JCL generator when deciding whether this line is to be included in the generated output. You can display these conditions by pressing PF11 in the "Edit JCL Skeleton" screen. Pressing PF10 re-displays the skeleton.

Warning:
Do not delete JCL lines which contain conditions, because such lines are part of the complex network of SMA's "installation knowledge".

For detailed information on the contents of skeletons, refer to the section JCL Skeletons.

Step 5: Committing Changes to your Default Environment

SMA stores most information in two versions: "installed" and "to be installed". This status tells the JCL generator which changes to the specification of an environment are new and are to be installed. After successful execution of all generated jobs, the products are set to status "installed", and the new parameter values become the "installed" values.

The changes made so far are only valid in the default environment, which is not meant for generation, but to supply the other environments with default values. Therefore, you have to tell SMA explicitly, that the values entered so far are "installed".

To do this, access the Environment Maintenance menu and issue the line command SE for your default environment.

Installing Software AG Products with SMA

If you have already installed Adabas and Natural in one or more databases, you are recommended to start using SMA with the installation of the next Natural version.

If your Software AG products are not available on SMA tapes, order the SMA tapes from Software AG, and proceed as described in this section.

Warning:
Starting to use SMA with a subproduct of Natural is not possible, because most subproducts require changes to the installation of Natural itself. Thus Natural must be installed with SMA first.

To install a Software AG product using System Maintenance Aid, execute the following steps:

- Step 1: Accepting new Product Tapes (batch job TABLOAD)
- Step 2: Copying Datasets from Tape to Disk
- Step 3: Preparatory Steps
- Step 4: Defining Your Installation Environment
- Step 5: Generating JCL
- Step 6: Inspecting and Submitting the Generated Jobs

These steps are described in detail in the following sections.

Step 1: Accepting new Product Tapes

When you have received an SMA product delivery tape from Software AG, you must make this tape known to SMA. SMA product tapes can be distinguished from other Software AG tapes by:

- the tape name *Tnnnnn*, where *nnnnn* represents a five digit number
- the name of the first dataset on the tape: SMT*nnn*.TABS

Before proceeding check whether the parameter LIB-GROUP in your default environment has been modified according to your requirements.

Choosing the value of the LIB-GROUP parameter must be considered carefully; of course, this parameter can be changed like all other parameters after JCL generation, but in this case, you have to delete all the then obsolete entries for library copies in the "Tape-Handling" part of SMA.

To make the tape known to SMA, execute the command LOAD. This command requires the first dataset on tape to be assigned to Natural work file 1, so normally, you should start this process in batch mode.

This step loads the description of the tape into your SMA data file. This description comprises table data for SMA's JCL generator as well as descriptive text. See the member TABLOAD in the SMA source library for an example job.

You should read the text describing the tape and, based on this information, decide when and how to work with this tape. You can find the information in two ways:

- Select the tape report for this tape from the "Reports" menu.
- Enter the "Tapes" branch from the SMA Main Menu, and select one of the functions available for the new tape:
  - Display the "READ ME" texts (line command RE)
  - Show the list of products on this tape (line command PR)
  - Show the list of datasets on this tape (line command DA).

Step 2: Copying Datasets from Tape to Disk

During JCL generation, SMA must be able to find the datasets. Therefore, all copy steps for Software AG's installation datasets must be controlled by SMA.The default copying process is described in Default Copying in the section SMA Data Topics.

If you wish to control this copy process, proceed as described in the following section.

Controlled Copying

The "Tapes" part of SMA gives you the opportunity to control the copying:

1. Enter the line command DA..Datasets in the tape selection list for the respective tape.
2. Enter the line command MO..Modify for the dataset(s) you want to copy from tape to disk.
3. Modify the dataset parameters that describe the storage on disk.
4. Enter the line command MA..Mark-for-Copy for this dataset. The dataset will be marked as "to be copied", and the required JCL will be generated during the next JCL generation.

This process is useful if you want to copy several datasets (not just the libraries) from tape to disk. If you have sufficient disk space, it is convenient to have all installation datasets available on disk.

Experienced users can also use these facilities to make SMA use existing libraries: Let the JCL generator decide which copy entries are needed according to your LIB-GROUP parameters, then enter SMA's "Tapes" part and change the "Dataset Name on Disk".

Step 3: Preparatory Steps

VSE/SP

The Software AG product library must have been created during the installation of SMA (see the section Installing System Maintenance Aid).

Define one sublibrary per environment in the Software AG product library. The names of these sublibraries must be specified in parameter USRLIB in the next step. Most of the assembly and link steps of the generated jobs will use these sublibraries as target libraries.

OS/MVS

Two work libraries are required for each environment you are using in SMA:

- A load library to receive the results of the linkage-editor steps. The recommended size for this work library is 10 cylinders on a 3380 type device or equivalent.
- A source library for the generated source members (for example, the Natural parameter modules).

Ensure that these libraries are allocated on one of your disks.

In the next step, you must enter the names of these libraries as the parameters DSN-SMALOAD and DSN-SMASRCE.

BS2000

No preparatory steps required.

Step 4: Defining Your Installation Environment

The main step in product installation is the description/modification of your environment.

Proceed as follows:

1. If you want to install in a new environment, copy or clone an existing environment to a new one, and enter up to four lines of descriptive text.
2. Select the environment from the selection list using the line command MO..Modify.
3. Select "Install Products", and use the line command IN.. Install to mark the products you want to install next. The selected products receive the status "to be installed".
   You need not install all products at once; you are recommended to install the basic products first, and then to go on adding other products. SMA will check possible prerequisites or conflicts between products installed or "to be installed".
4. Select the parameter groups one after another, and add your new parameter values as needed. You may prepare for this step by printing the "Parameters" report. This report is produced by the command REP PARM *env* or by entering SMA’s "Reports" branch and requesting report "P".

Step 5: Generating JCL

After you have marked the products and parameters, you can ask SMA to produce JCL. This can be done online or in batch mode.

JCL Generation in Dialog Mode

Use the direct command GENERATE <environment> or the line command JC..JCL-Generation from the "Environment Maintenance" menu to start JCL generation.

The JCL generator produces installation steps not only for the products marked as "to be installed", but also for all those steps containing a changed parameter. Since the analysis for this generation process is rather resource consuming, SMA will ask you to wait.

The results of this analysis are provided as the "Installation Guide". You are recommended to print out this guide and use it as a checklist for successful execution of all jobs and steps.

The JCL generator writes the generated jobs into the SMA database. You can inspect the jobs and modify them if necessary.

If BS2000 is used:
when you enter the GENERATE command in dialog mode, a job is submitted to perform the JCL generation in batch mode.

JCL Generation in Batch Mode

If you start JCL generation in batch mode, the generated jobs will be written to both work file 2 and the SMA data file. If you prefer to work with jobs from operating system libraries, you can load this work file into a library and edit and submit the jobs there.

See the member JCLGEN (E.JCLGEN with BS2000) in the SMA source library for an example job. The first step of this job deletes the JCL library. If you want to keep the generated JCL, you must either change this job, or copy the generated members to other libraries.

Please refer to this example job also for information on the printer and work files which are used during JCL generation.

For additional information refer to Using System Maintenance Aid (SMA) in Batch Mode.

Step 6: Inspecting and Submitting the Generated Jobs

OS/MVS and VSE/SP

1. Print the Job P060. Follow the instructions which are given in this job.
2. Inspect and modify the generated jobs if required.
   If the generated jobs do not correspond to your expectations, you should consider changing the appropriate parameters or JCL skeletons in the environment.
   It is also possible to modify the generated jobs. This should, however, be avoided since these corrections must be repeated after each generation, whereas changes to the environment will be valid for all future JCL generations.
   If you are sure that SMA generated too many steps (see Generated Steps in the section SMA Data Topics), either delete them in the generated jobs, or perform the following procedure. It ensures that only those steps are generated which are dependent on the products "to be installed":
   - Enter the "Environment" function of SMA, select line command SE..Set-Installed.
   - Enter the line command MO..Modify, select "Products Installed in Environment", and mark the products you want to install again.
   - Repeat the JCL generation (Step 5).
3. Submit the generated jobs in the following sequence:
   - the T*xxx* jobs in any order, if any
   - the P*xxx* jobs in any order (except for the "READ ME" job P060)
   - the I*xxx* jobs in the order indicated by the job name.

   After execution of the jobs check whether they have been completed without error.

4. Print Job I100. Follow the instructions which are given in this job.
5. If you wish you can save the generated jobs.
   SMA assumes that once a job has been executed successfully, it will be deleted. The JCL generator asks you to delete any jobs which might still exist for the current environment.
   If you want to keep generated jobs, use the line command CO..Copy on the "Generated Jobs" screen to store the jobs. Then you can display the list of saved jobs using option "Saved Jobs" from the Administration Menu.

BS2000

- **Automated Installation Procedure**
  During JCL generation, job E.INSTALL was generated. To use the "Automated Installation Procedure", enter job E.INSTALL. This job starts all the installation jobs one after another. It waits for the completion of each job and checks whether it has terminated normally.

- **Manual Installation**
  1. The generated jobs are stored in the LMS library. The name of this library is coded by parameter V-JOBLIB (default: J1).
     (If LMS is not available: all files with prefix J1.).
  2. Read file #READ-ME. It contains additional instructions to be considered before and after the installation.
  3. Enter the generated jobs in the following sequence:
     - E.T*xxx* in any order
     - E.I*xxx* in the order indicated by the job name

     Read file L.REPORT to check whether the jobs terminated normally.

  4. If an error occurred:
     - The first message line in file L.REPORT contains the name of the SYSLST log file of the erroneous job step.
     - If you have to correct a job you should not just modify the generated job, but apply the changes in SMA and perform JCL generation again.
     - Note that there is a restart routine: If you enter an interrupted job again, it will not start from the beginning but from the step where the interrupt occurred (JV=ON **must** be specified.).
  5. After completion of the installation, enter Job E.I999. This job
     1. will set the status of all products within SMA to "installed".
     2. will reset the job variable which controls the restart routine (see parameter SMAJV).

Maintaining Software AG Products with SMA

The following topics are covered below:

- Installing New Products in an Existing Environment
- Installing New Versions of Products in Existing Environments
- Installing Corrections in the Natural System File
- Implementing Corrections to Libraries

Installing New Products in an Existing Environment

When you receive a tape containing a new product, proceed as follows:

1. Make the new tape and the product known to SMA by executing the LOAD command for this tape.
2. Access the Environment Maintenance menu from the Main Menu (function E).
3. Select your test environment by marking it with the line command MO.
4. Select "Install Products".
5. Mark the new product to be installed using line command IN.
6. Return to the "Environment Maintenance" screen and enter the line command JC for your test environment.

You can then install the new product using the generated JCL.

Installing New Versions of Products in Existing Environments

A new version of a product is considered by SMA to be a new product. Therefore, the steps described in section Installing Software AG Products with SMA also apply when installing a new version of a product which is already installed in an environment:

- Perform "Step 1: Accepting new Product Tapes" (batch job TABLOAD) as described above.
- Perform "Step 2: Copying Datasets from Tape to Disk" as described above.
- Skip "Step 3: Preparatory Steps."
- Perform Step 4: Defining Your Installation Environment" under consideration of the following points:
  - Mark the new version (for example, CNT323) "to be installed", and leave the older version (for example, CNT322) as "installed".
    When a new product version (for example, CNT323) is set to status "installed", the status of the older version (for example, CNT322) will be reset to "not installed" automatically.
  - Adapt the parameters in group OPTION which pertain to this product.
- Perform "Step 5: Generating JCL" as described above.
- Perform "Step 6: Inspecting and Submitting the Generated Jobs" under consideration of the following points:
  - In some cases, migration jobs may be required, for example, when data formats have been changed from one major version to the next. SMA recognizes this and generates migration steps based on the presence of the two versions of the product.
  - Sometimes it is necessary to delete parts of a product installation, before the installation steps of the new version can be executed. To avoid inadvertent loss of data, such operations are not generated by SMA.
    Example:
    When installing a new version of Con-nect, the load step for the Con-nect system file is also generated. This step does not run when a system file already exists. You must either delete this system file or omit the load step. The information required for tasks like this is contained in the product documentation.

Installing Corrective IUPDs - INPLs, ERRNs

These objects are stored in the Natural System file. Because each Natural system file is controlled by an SMA user environment, it is necessary to install these corrections like products within an SMA user environments.

Note:
For better overview, these corrections are shown in a list separate from normal products in SMA. Normally these products have names like P122424 or NA2608.
These corrections are received from Software AG support or via ServLine24: http://servline24.softwareag.com, Software AG's online support system.

To install such a correction

1. Make the new tape (or dataset) with the correction known to SMA by executing the LOAD command for this tape.
2. Enter the "Environments" function from the SMA Main Menu.
3. Select the target environment by entering the MO..Modify line command.
4. Select "Install Correction in System file" from the Modify window.
5. Mark the correction for installation using the IN..Install line command.
6. return to the environment selection list and enter the line command JC..JCL-Generation, then submit the generated job.

Implementing Corrections to Libraries

Corrections to product libraries are maintained and applied in a separate part of SMA. You reach this part with option "Z" from the SMA Main Menu.

The following type of corrections to libraries exists:

Z ZAPs: these are modifications of code at specific addresses.

The following topics are covered below:

- Entering Corrections in SMA
- Applying Corrections

Entering Corrections in SMA

There are different ways to load a correction into SMA:

- If the correction is only available on paper (for example, an Early Warning letter or a fax) you must enter it manually. Choose option "Z" on the SMA Main Menu, then press PF6 or enter the command ADD ZAP.
- If one or several corrections are available as a sequential file in your host computer, you can load them into SMA using the LOAD command. Use job TABLOAD as an example, assigning work file 1 to the dataset containing the correction(s). Each correction in the sequential file must be preceded by a header line, which can have one of the following two formats:

```
*+*+ZAP:<ZAP-number>

or
          OS/MVS
##ZAP,    BS2000  ,<ZAP-number>,Z,Y,<creation-date>,<symbolic-dataset-name>
          VSE/SP
```

  For example:

  ```
  ##ZAP,VSE/SP,NA34003,Z,Y,990817,NAT234.LOAD
  ```

  If the header line has the first format, the remaining information (like, for example, the correct library reference) will be provided by SMA via default values. These default values will be valid if the correction has been supplied by Software AG.

- If one or several corrections are available as MS/DOS files on your PC (for example, via ServLine24: http://servline24.softwareag.com), you can load them into SMA using the LOAD command. The conventions documented above apply in this case as well. Since the LOAD command reads work file 1, you just have to invoke Natural with work file 1 pointing to the PC, for example:
  `NAT2 WORK=(PC3,...),PC=ON`
  After loading the correction file you should print report "A" or "Z" for a list of the corrections available.

Applying Corrections

SMA supports corrections applied to the members of the installation libraries in the library groups.

A library group may be used in different environments. Thus, applying a correction to a library group may affect multiple environments. Applying corrections to linked modules is not supported by SMA.

To apply/undo a correction

1. Select option Z from the SMA Main Menu. Decide in which library group to apply/undo this correction (e.g., in the test group), and select the desired library group with the line command DI..Display.
2. In the list of corrections, mark the corresponding correction(s) with the line command AP..Apply or UN..Undo.
3. Enter line command JC..JCL-Generation for your library group in the list of library groups to generate JCL for the correction application.
   During JCL generation, SMA evaluates which linked modules are affected by this correction. This information is displayed and kept internally by SMA.
   After JCL generation, the "Generated Jobs" screen indicating the list of jobs is displayed.
4. Submit the generated job(s) to apply/undo the correction(s). The last step of this job sets the status of the corresponding correction(s) to "is applied" or "undone", respectively.
5. Make the correction "effective" by relinking all affected modules. This is done simply by calling JCL generation in the corresponding environments. SMA "knows" which executable modules have to be relinked, and generates the appropriate JCL.
   Several reports providing information on corrections are available from the "Reports" menu (see Reports in the section Menus and Line Commands) or via direct commands (see Printing Reports in the section Direct Commands).

Installing System Maintenance Aid

This section covers the following topics:

- General Information
- Installing SMA in an existing Adabas/Natural Environment
- Initial Installation Procedure for SMA
- Installation Procedure for Migrating from SMA 1.2 to SMA 1.3
- Installing and Using System Maintenance Aid under VM/CMS
- Installation Verification
- Initial Installation of Adabas, Natural and System Maintenance Aid
- Starter System for VSE/SP
- Starter System for MVS
- Starter System for BS2000

General Information

SMA is an application completely written in Natural, and uses data in an Adabas database.

If Adabas and Natural are not installed, the SMA Starter Systems, which are described later in this section, must be used.

SMA can be installed easily into an existing Adabas/Natural environment.

As a prerequisite, Natural Version 2.3.4 or a later version must be installed.

Installing SMA in an existing Adabas/Natural Environment

The following topics are covered below:

- The Installation Tape
- Copying the Source Dataset to Disk

The Installation Tape

The installation tape contains the datasets listed in the table below. The sequence of the datasets is shown in the Report of Tape Creation which accompanies the installation tape.

Dataset	Description
SMA*nnn*.INPL	Natural programs of SMA
SMA*nnn*.ERRN	Error messages for SMA
SMA*nnn*.SYSF	SMA system file
SMA*nnn*.SRCE	Source library with SMA example jobs (MVS and BS2000)
SMA*nnn*.LIBJ	Sublibrary with SMA example jobs (VSE only)
SMA*nnn*.HELP	Help text
SMA*nnn*.DATA	Contents of the SMA system file in TABS-format (VSE and MVS only)

The notation *nnn* in dataset names represents the version number of the product.

The dataset type and the space each dataset requires on disk is shown in the Report of Tape Creation.

Copying the Source Dataset to Disk

Copy the source dataset to a disk. This file contains example jobs for the installation steps for SMA itself as well as examples for loading SMA table data from a product tape and for generating JCL with SMA in batch mode.

Example jobs for copying from tape to disk under different operating systems are given in the following sections.

OS/MVS

Use an IEBCOPY job.

```
//... JOB ...
//SRCE EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//IN   DD DSN=SMAnnn.SRCE,DISP=(OLD,PASS),
//     VOL=SER=SMA1..,UNIT=TAPE,LABEL=(...,SL)
//OUT  DD DSN=...SMA1...SRCE,DISP=(NEW,CATLG,DELETE),
//     VOL=SER=......,UNIT=....,
//     DCB=*.IN
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
//
```

VSE

The library concept for SMA under VSE assumes (at least) one library, which has sublibraries per Software AG product library. In addition to these installation sublibraries, you need a work sublibrary and a sublibrary for initial installation jobs for SMA itself. If you are not already using such a library, it is recommended that you create this library now, with one sublibrary for the object created during Software AG product installation.

The following job creates this library. The size needed for the library depends on the number of products and versions which will be loaded into this library later on; the following example uses 1200 TRK of a 3380 device as a recommended size.

```
* $$ JOB JNM=SMADEF,CLASS=0,DISP=D,LDEST=(,...)
* $$ LST CLASS=A,DISP=D
// JOB SMADEF
// DLBL SAGLIB,'INSTALL.SMALIB',99/365,SD
// EXTENT ,vvvvvv,1,0,nnnn,1200
// EXEC LIBR,PARM='MSHP'
DEFINE LIB=SAGLIB
DEFINE SUB=SAGLIB.USRLIB,REUSE=AUTO,R=Y
/*
/&
* $$ EOJ
```


The job below adds a label for the library created with the previous job to the standard label area. This label will be used as a value for the LIB-GROUP parameter; it is recommended (but not mandatory) value is "SAGLIB".

```
* $$ JOB JNM=STDLABEL,CLASS=A,DISP=D
* $$ LST CLASS=A,DISP=D
// JOB STDLABEL
// OPTION STDLABEL=DELETE
 SAGLIB
/*
// OPTION STDLABEL=ADD
// DLBL SAGLIB,'INSTALL.SMALIB'
// EXTENT ,vvvvvv
/*
/&
* $$ EOJ
```

Now copy the sublibrary containing the SMA sample jobs from the tape using the following JCS:

```
* $$ JOB JNM=SMAJOBS,CLASS=o,DISP=D,LDEST=*,SYSID=1
* $$ LST CLASS=A,DISP=D
// JOB SMAJOBS
// ASSGN SYS005,IGN
// ASSGN SYS006,cuu,VOL=Tnnnnn
// MTC REW,cuu
// MTC FSF,SYS006,nn
*  Tape positioned at file ?, tape mark nn
// EXEC LIBR,PARM='MSHP'
 RESTORE SUBLIB=SAGLIB.SMAnnnJ:SAGLIB.SMAnnnJ
         TAPE=SYS006 -
         LIST=YES -
         REPLACE=NO
/*
// MTC REW,SYS006
/*
/&
* $$ EOJ
```

The notation *nn* represents the file sequence number of SMA*nnn*.LIBJ, as shown in the Report of Tape Creation.

BS2000

Use the first dataset on the tape as input to EDT and read the tape using READ:

```
/FILE SMA....SRCE,LINK=EDTSAM,                -
/     BLKSIZE=,RECSIZE=,RECFORM=,             -
/     VOL=SMA...,DEV=T-C1,FSEQ=1,STATE=FOREIGN
EXEC EDT
@READ '/FILE'
@SY   'REL EDTSAM'
@WRITE 'P.SMAnnn'
@HALT
```

Now use EDT to adapt and create jobs E.SMAINST and E.JCLGEN, and procedure P.TABLOAD. In these jobs/procedure, replace ## by the specifications valid for your environment.

Then issue the following command:

```
/CALL SMAnnn, PRODUCT=SMAnnn
```


Initial Installation Procedure for SMA

Step 1: Load the SMA System File - Job I050, Step 1800

Load the initial SMA data into an Adabas database. You may choose any file number for this loading. Version for ADALOD is 6.

Use the following options in this ADALOD step:

```
USERISN
ISNREUSE=YES
VERSION=6
MAXISN=30000, DSSIZE=200B, NISIZE=200B, UISIZE=100B.
```

Note:
Option USERISN is essential for the correct operation of SMA.

Step 2: Load Natural Objects - Job I061, Step 1800

Load the Natural programs of SMA (SMA*nnn*.INPL) into the Natural system file using the INPL utility of Natural.

Step 3: Load Error Messages - Job I061, Step 1802

Load the error messages of SMA (SMA*nnn*.ERRN) into the Natural system file using the ERRLODUS utility of Natural.

Step 4: Specifying Natural Parameters

Whenever you invoke Natural to work with SMA, do either of the following:

- Append the following macro definition:
  `NTFILE ID=208,DBID=`*`dbid`*`,FNR=`*`fnr`*
  in your Natural parameter module, where *dbid* is your database ID and *fnr* is the file number where you loaded the SMA data file. Then reassemble and relink the Natural parameter module.
- Or use the dynamic parameter
  `LFILE=(208,`*`dbid`*`,`*`fnr`*`)`

If you wish to use the JCL generation online, specify the following parameters:

```
DATSIZE=50
ESIZE=64
MADIO=0
MAXCL=0
```

The PRINTER parameter should allow for at least 1 printer in online and 3 printers in batch. If no physical or logical printer is available, set "Printer ID" to DUMMY or blank in the SMA Profile. See SMA Profile in the section Menus and Line Commands for an explanation of this parameter.

Depending on the TP environment under Natural the following specification may also be necessary:

RJESIZE=32

Step 5: Operational Requirements

Adabas Nucleus:

Allow for approximately 500 ISNs to be kept in the hold queue:

```
NH=2000
NI=500
```

Step 6: SMA under Natural Security

When using System Maintenance Aid under Natural Security, the following prerequisites must be fulfilled:

- The library SYSSMA1 must be defined in Natural Security.
- SMA uses the Natural Command Processor, which must also be defined in Natural Security. This can be done with the following actions:
  - Enter Natural Security library maintenance.
  - Modify library SYSSMA1.
  - Select "Additional Options".
  - Select "Functional Security".
  - Enter SMACPROC in the field "Command Processor", and mark the "Keyword default" field. After pressing Enter, the "Functional security defined" should stay on Yes, and "Keyword default" should be allowed.
  - Leave Natural Security.

Installation Procedure for Migrating from SMA 1.2 to SMA 1.3

Using SMA for installing SMA

We recommend to install SMA 1.3 using SMA itself. After performing the LOAD for the delivery tape of SMA13*n* please make sure that SMA parameters SMA-FIRST-INSTALL in group OPTION is set to N.

Step 1: Load Help Text - Job I082, Step 1800

The help text is loaded from file SMA*nnn*.HELP with the LOAD command. It is recommended that this be performed in batch, using the following input cards:

```
LOGON SYSSMA1
MENU
LOAD
FIN
```

Note:
If (for any reason) migration stops during execution, it can be repeated any time.

Installing and Using System Maintenance Aid under VM/CMS

Although System Maintenance Aid cannot be used to generate install sequences for installing Software AG products under VM/CMS, it can be worthwhile to use SMA itself from within VM/CMS.

In particular this may be the case for VSE system programmers, who use VM/CMS to maintain their VSE systems.

Prerequisites

Adabas version 6.2.3 or above and Natural version 2.3.4 or above must be installed, and running under VM/CMS.

Installation Tapes

Use the SMA tape for your target operating system (i.e., if you want SMA to generate VSE job control), use the installation tape for SMA*nnn* for VSE/SP.

Installation Procedure

The installation procedure for SMA under VM/CMS is the same as described for VSE or MVS. Adapt the EXEC’s already being used to perform the various steps.

Usage Hints

Submitting jobs

System Maintenance Aid uses standard NATRJE to submit jobs. Under VM/CMS this just means "punching" to the virtual punching device. Issue the command CP PU TO <machine> before you start Natural.

Note:
<machine> is the name of the virtual machine where your target system (e.g., VSE) is running.

Loading ZAPs

When you issue command LOAD for ZAPs from Software AG, then SMA initially does not know the operating system where the ZAP shall be used. SMA 1.3 will take any operating system which you are using in your SMA environments. (Thus, you should not combine several operating systems, e.g., MVS and VSE in the same system file when running SMA in VM/CMS).

Work file for LOAD

When you do the SMA LOAD from tape you need to issue a FILEDEF command like the following before invoking Natural:

```
FILEDEF CMWKF01 TAP1 (RECFM FB LRECL 80 BLKSIZE 6000.
```

Invoking Natural

When performing the INPL and ERRLODUS for SMA, as well as the SMA LOAD, make sure to specify the following parameters for Natural for CMS:

```
WORK=(OS,OS)
```


Installation Verification

1. Enter online Natural, by entering the following command:
   ```
   LOGON SYSSMA1
   MENU
   A
   ```
2. Adapt the GLOBAL parameters and the SMA profile
3. Use function "Tabload" from the administration menu to LOAD the TABS data from a Software AG delivery tape
4. Enter the environment part, issue line command CO (=Copy) for your default environment, in the new environment mark the most current version of ADA to be installed.
5. Enter the report part, invoke report "P" for the newly created environment, mark for printing.
6. Submit a batch Natural job, with the following input:
   ```
   LOGON SYSSMA1
   MENU
   SET ENV <your-new-environment>
   GEN
   FIN
   ```
7. Enter online Natural again, the environment section, and issue line command JO to see the jobs generated to install Adabas.
   Note:
   At this point the generation of JCL serves the installation verification test only.

Initial Installation of Adabas, Natural and System Maintenance Aid

If neither Adabas nor Natural is already installed, the SMA Starter Systems can be used. The Starter Systems perform a standardized installation of these two products as well as SMA itself. They create a standardized, but full-function Adabas/Natural environment.

The Starter Systems for OS/MVS and VSE/SP require a number of specifications to be entered by the user. With OS/MVS, these specifications are gathered with a TSO CLIST; with VSE/SP, a program is supplied which performs a dialog via the operator console, and then generates all necessary jobs.

The Starter Systems install an Adabas database, and load Natural (including SMA) into this database. After this process, Natural and SMA can be used in batch mode or in dialog mode.

Note:
This is a standardized installation of Adabas and Natural. It is, however, based on the regular product datasets for Adabas and Natural, and the installation uses the standard installation jobs.

Basic Installation Process for BS2000

The Starter System for BS2000 consists of a "ready-to-use" Adabas database and Natural nucleus. These are supplied on a tape in ARCHIVE format and must only be copied to disk.

For additional information, see the ARCHIVE report which is provided with the installation tape.

Run DEMO.E.STARTADA to start the Adabas nucleus. You may access Natural with procedure DEMO.P.STARTNRT.

Basic Installation Process for OS/MVS and VSE/SP

The installation jobs generated by the Starter Systems perform the following tasks:

- Copy the libraries for Adabas and Natural from the product tape (job SMAI001).
- Install Adabas (Jobs up to SMAI040). This task consists basically of the following sub-tasks:
  - Allocate the files for the database
  - Install the Adabas SVC
  - Format and define the database
  - Start the database nucleus
  - Load the example files
- Install Natural (Jobs SMAI055 to SMAI080). This task basically consists of two parts:
  - The executable modules must be provided. This requires a sequence of assembly and link steps.
  - The Natural objects must be loaded into the Adabas database. This is done using the Natural utility programs INPL and ERRLODUS.
- Inform the "normal" SMA about the installation performed so far (job SMAI999).

Refer to the Adabas Implementation and Maintenance documentation and the Natural Operations for Mainframes documentation for detailed explanations of these installation steps.

Database Space Considerations for OS/MVS and VSE/SP

The Starter Systems ask the user to specify the amount of space to be allocated for the database files. These files will contain the Natural objects of Natural and SMA, as well as possibly other Software AG products, plus user data or user Natural applications.

Therefore, the sizes of these files depend on the amount of user data and programs, and on the number of Software AG products to be loaded into this database.

As a rule of thumb, the following procedure is recommended to estimate reasonable sizes for the files of the Adabas database:

- DATA:
  Calculate the space requirement in megabytes:
  - Assume 15 megabytes as the average space requirement for each major Software AG product, such as, Natural itself, Con-nect, Super Natural, etc. Some products are bigger than this, some are smaller.
  - Add the estimated sizes of user data and programs to this value.
  - The minimum value to run the generated jobs is 45 megabytes.

  Convert this number into the allocation units of your disk.
  Here are some figures for special devices:

  3350: 1 CYL = 30 TRK = approximately 0.57 megabytes

  3375: 1 CYL = 12 TRK = approximately 0.43 megabytes

  3380: 1 CYL = 15 TRK = approximately 0.73 megabytes

- ASSOCIATOR: For this file, one-third of the DATA space is recommended.
- WORK: 20 megabytes.
- TEMP and SORT: 7 megabytes each.

You are recommended to put ASSO, DATA and WORK each on different volumes to reduce disk contention.

Note:
Keep in mind that these are just rules of thumb to have reasonable sizes to start with. For more detailed information on space requirements refer to the documentation for Adabas or Software AG courses for database administration.

Starter System for VSE/SP

The following topics are covered below:

- Tape Contents
- Prerequisites
- Preparation
- Installation Steps
- Messages

Tape Contents

For a first-time installation with the SMA Starter Tape, you need one tape with the following contents:

- product datasets for the products Adabas, Natural, Natural CICS Interface, and SMA.
- a LIBR backup of the SMA starter system library.

The installation tape contains the datasets listed in the table below. The sequence of the datasets is shown in the Report of Tape Creation which accompanies the installation tape.

Dataset Name	**Description**
SMA*nnn*.INPL	INPL dataset
SMA*nnn*.ERRN	Error messages file
SMA*nnn*.SYSF	DOS system file
SMA*nnn*.DATA	Contents of DOS SMA system file in TABS-format
SMA*nnn*.HELP	Help text
SMA*nnn*.LIBJ	LIBR backup of SMA library
SMA*nnn*.MIGR	Changed skeletons
SSD*nnn*.LIBR	LIBR backup of starter library

Prerequisites

The following prerequisites and restrictions apply:

- Only VSE/SP2 or higher is supported.
- VSE/POWER must be installed.
- Com-plete (version 5.1 or above) or CICS (version 1.7 or above) must be installed.
- Only the R1-extents of ASSO, DATA, WORK, TEMP and SORT are supported.
- The different files of the database can be distributed over different volumes, but each of them must fit on a single volume.
- User-defined block sizes are not supported.
- Your system should be set up so that unwanted parallel execution of the generated jobs is avoided. If VSE/POWER Shared Spooling is installed, ensure that CLASS=0 is activated in exactly one participating VSE system.

Preparation

This section gives a detailed list of preparatory actions and considerations:

- Allocate and define the Software AG product library. This library will be used for SMA and for all products and their different versions that you will receive from Software AG. Approximately 60 megabytes or 1200 tracks of a 3380-type DASD is a reasonable size for this library.

```
    * $$ JOB JNM=SMADEF,CLASS=0,DISP=D,LDEST=(,...)
* $$ LST CLASS=A,DISP=D
// JOB SMADEF
// DLBL SAGLIB,'INSTALL.SMALIB',99/365,SD
// EXTENT ,vvvvvv,1,0,nnnn,1200
// EXEC LIBR,PARM='MSHP'
DEFINE LIB=SAGLIB
/*
/$
* $$ EOJ
```

- Add the label SAGLIB for this library to the standard label area.

```
    * $$ JOB JNM=STDLABEL,CLASS=A,DISP=D
* $$ LST CLASS=A,DISP=D
// JOB STDLABEL
// OPTION STDLABEL=DELETE
 SAGLIB
/*
// OPTION STDLABEL=ADD
// DLBL SAGLIB,'INSTALL.SMALIB'
// EXTENT ,vvvvvv
/*
/&
* $$ EOJ
```

- Prepare a 1 MB (minimum) partition to be used for the Adabas nucleus.
- Provide 300 contiguous tracks or 3000 blocks (if an FBA device is used) of disk space for work datasets.
- Provide Adabas disk space.
- Provide 5 consecutive logical units (for example, SYS030 to SYS034).

- **CICS only:**
  - Add the following definitions:

```
DFHPPT TYPE=ENTRY,PROGRAM=NCnnnXX,
       PGMLANG=ASSEMBLER,RES=YES,RSL=PUBLIC
DFHPPT TYPE=ENTRY,PROGRAM=NATnnnSH,
       PGMLANG=ASSEMBLER,RES=YES,RSL=PUBLIC
DFHPPT TYPE=ENTRY,PROGRAM=NCnnnCB,
       PGMLANG=ASSEMBLER,RSL=PUBLIC
DFHPPT TYPE=ENTRY,PROGRAM=NCIXCALL,
       PGMLANG=ASSEMBLER,RSL=PUBLIC
DFHPPT TYPE=ENTRY,PROGRAM=NCIZNEP,
       PGMLANG=ASSEMBLER,RSL=PUBLIC
DFHPPT TYPE=ENTRY,PROGRAM=ADABAS,RES=YES
DFHPCT TYPE=ENTRY,TRANSID=Nnnn,
       DTB=YES,
       TWASIZE=128,
       CLASS=SHORT,PROGRAM=NCnnnXX,
       RESTART=NO
DFHPCT TYPE=ENTRY,TRANSID=NMSG,
       DTB=YES,
       TWASIZE=128,
       CLASS=SHORT,PROGRAM=NCnnnXX,
       RESTART=NO
DFHFCT TYPE=FILE,
       FILE=NCnnnR1,
       ACCMETH=VSAM,
       RECFORM=(FIXED,BLOCKED),
       SERVREQ=(ADD,UPDATE,DELETE),
       FILSTAT=(ENABLED,OPENED),
       BUFND=5,STRNO=3
DFHFCT TYPE=FILE,
       ACCMETH=VSAM,
       FILE=CMEDIT,
       FILSTAT=(ENABLED,OPENED),
       LSRPOOL=NONE,
       RECFORM=(FIXED,UNBLOCKED),
       RSL=PUBLIC,
       SERVREQ=(ADD,UPDATE,DELETE),
       STRNO=4
```

    where *nnn* represents the Natural version which is being installed.
  - Concatenate <saglib>.USRLIB to the LIBDEF chain of CICS startup JCL.
  - CICS storage requirements:
    740 KB program storage
    530 KB partition GETVIS

- **Com-plete only:**
  - Supply the following procedures:
    COMFILES for all Com-plete datasets
    COMLIBS for all Com-plete libraries.

Installation Steps

For the installation, execute the following steps:

Step 1: Mount SMA Starter Tape

Mount the SMA starter tape on the tape drive.

Step 2: Define Sub-directories

Define two sublibraries in the Software AG product library and restore sub-library SMA from this tape:

```
* $$ JOB JNM=SMALIBR,CLASS=0,DISP=D
* $$ LST CLASS=A,DISP=H
// JOB SMALIBR
// ASSGN SYS006,cuu                    (assign physical tape unit)
// MTC REW,SYS006
// MTC FSF,SYS006,nn                   (assign tape mark off SSDnnn.LIBR)
// EXEC LIBR
 DEFINE S=SAGLIB.SMA REUSE=IMMEDIATE
 DEFINE S=SAGLIB.USRLIB REUSE=IMMEDIATE
 RESTORE S=SAGLIB.SMA:SAGLIB.SMA   -
 TAPE=SYS006 R=Y
/*
```

Note:
where *nn* stands for the number of tape files to be skipped. Please refer to the Report of Tape Creation for this number.

Step 3: Start SMASTART

Start job SMASTART from SAGLIB.SMA. This job collects all the data needed for the installation per dialog via the operator console.

Most of the console messages are self-explanatory; refer to Messages later in this section for detailed explanations of all prompting messages and possible responses.

The following commands are valid responses to all prompts:

Command	Meaning
EOJ	Finish the Starter System without generating jobs
RESTART	Restart the Starter System from the beginning
CANCEL	Cancel the Starter System without dump
CANCEL,DUMP	Cancel the Starter System with dump

Job SMASTART will display the message "NOW GENERATING JOB SMA..." for all generated installation jobs. These jobs are written to the reader queue.

Step 4: Start SMALIBR

Job SMALIBR will start automatically after job SMASTART. This job catalogs all generated jobs in SAGLIB.SMA.

If you want to use these catalogued jobs you have to edit them first:

- change all "%%" to "$$";
- change all "C%TAL" to "CATAL";
- change all "B%END" to BKEND".

Step 5: Follow the instruction jobs SMAP...

Jobs "SMAP..." are not to be executed but contain instead comments which must be followed before submitting the SMAI... jobs.

Step 6: Run the installation jobs SMAI...

Release all generated jobs SMAI... in the order indicated by the job names. All jobs were generated for job CLASS=0.

The job SMAI005 must be modified before releasing, so that correct information for the CICS threads is generated.

Note:
Special care must be taken with job SMAI040, the Adabas nucleus, since this job remains active permanently. Change the class of this job when releasing it, according to the partition you prepared for Adabas.

- Com-plete only:
  Catalog program NAT*nn*.

- CICS only:
  Re-start CICS. After CICS is up again, start Natural using transaction code N*nnn*.

Messages

All messages sent by the DOS Starter System have the form:

SMA*nnnx*, where: SMA is the error identifier;

nnn indicates the error number;

x is one of the following message types:

I information only

R outstanding reply

E error message

SMA900I Software AG's INSTALLATION PROCEDURE IS RUNNING

Explanation Informs about the beginning of the installation procedure.

Action This message is for your information only. No action required.

SMA920R--> ENTER THE ADABAS SVC NUMBER (*nnn*)

Explanation The SVC number is needed for the Adabas utility ADASIP and for all ADARUN cards. This message follows message SMA022I.

Action Refer to message SMA022I and enter either the proposed SVC number or any other unused SVC number between 31 and 120, or "GO" to display the next unused SVC number.

SMA921E NO UNUSED SVC AVAILABLE

Explanation The installation procedure tried to find an unused SVC at startup time, but it did not find any unused SVC in the range from 31 to 120.

Action The installation procedure is abended with dump. Save the dump and contact Software AG technical support.

SMA922I FIRST UNUSED SVC IS nnn

Explanation This message informs you about the first unused SVC greater than 30 found in the SVC table. This number should be used as input for message SMA020R.

Action This message is for your information only. No action required.

SMA923E SVC NUMBER MUST BE BETWEEN 31 AND 120

Explanation According to the Adabas documentation, the SVC number must be between 31 and 120.

Action Verify and correct the input.

SMA924E SVC IS ALREADY IN USE

Explanation The SVC number entered is different from the number proposed by message SMA022I and is already in use.

Action Verify and correct the SVC number.

SMA925R--> ENTER STARTING NUMBER FOR 5 LOGICAL UNITS

Explanation Five logical units are required for installing Adabas (for example, SYS030 to SYS034).

Action Enter the number of the first logical unit and ensure that the next 4 logical units are available.

SMA926E LU NUMBER MUST BE NUMERIC BETWEEN 10 AND 256

Action Verify and correct your input.

SMA930R--> ENTER 'ADABAS PHYSICAL OR PSEUDO DEVICE, VOLSER,START-TRK,NR-OF-TRK' FOR XXXXXX

Explanation xxxxxx is replaced with one of ASSOR1, DATAR1, WORKR1, TEMPR1 or SORTR1. This data is needed to build valid EXTENT cards for each of the database components, and to build valid parameters and ADARUN cards for Adabas utilities.

Action Enter at least 4 positional parameters.
For more information on the Adabas device type, refer to the Adabas Operations documentation.

SMA931E COMMA EXPECTED AT POS. 7 OF INPUT

Explanation The first positional parameter must have 6 characters followed by a comma. All parameters must be separated by commas.

Action Verify and correct the input line.

SMA932E AT LEAST ONE POSITIONAL PARAMETER MISSING

Explanation One of the first three parameters is missing.

Action Verify and correct the parameters. All parameters must be separated by comma.

SMA934E UNKNOWN VOLUME SERIAL NUMBER

Explanation The program did not find the volume serial number (first parameter) in your system.

Action Verify and correct the first parameter.

SMA937E START-TRK NOT NUMERIC

Explanation The second positional parameter does not contain a numeric value.

Action Verify and correct the second parameter.

SMA938E START-TRK IS NOT ON CYLINDER BOUNDRY ENTER 'YES' TO CONFIRM THE ABOVE DATA

Explanation The second positional parameter does not match Adabas restrictions. For FBA disks and artificial device numbers, this warning message can be ignored by replying YES. To verify your input refer to the Adabas Implementation documentation.

Action All Adabas components must start at cylinder boundary.

SMA939E NR-OF-TRK NOT NUMERIC

Explanation The third positional parameter does not contain a numeric value.

Action Verify and correct the third parameter.

SMA940E NR-OF-TRK IS NOT A MULTIPLE OF TRK/CYLINDER ENTER 'YES' TO CONFIRM THE ABOVE DATA

Explanation The third positional parameter does not match Adabas restrictions.

Action Verify the third parameter. All Adabas components must end at cylinder boundary. For FBA disks and artificial device numbers, this warning message can be ignored by replying YES. To verify your input refer to the Adabas Implementation documentation.

SMA941E NR-OF-TRK EXCEEDS DEVICE CAPACITY

Explanation The database component does not fit on the specified volume.

Action Verify and correct the parameters.

SMA942E OVERLAP ON xxxx-EXTENT

Explanation One database component overlaps another. xxxx specifies the overlapped component.

Action Verify and correct the parameters.

SMA943I UNIDENTIFIED FBA DEVICE. 3370 ASSUMED

Explanation The device type of the disk is not known to SMA. SMA will assume a 3370 device.

Action Check the generated EXTENT cards.

SMA945R--> ENTER PROCEDURE NAME FOR ADABAS FILES

Explanation A JCL procedure containing the DLBL statements for the files of the Adabas database will be generated later.

Action Enter the name of this procedure. Please make sure that no procedure with this name already exists.

SMA946R--> ENTER TP MONITOR FOR Natural (CICS/COM/BOTH)

Explanation The Starter System generates a Natural/CICS or a Natural/Com-plete environment or both.

Action Enter CI, CO or BO.

SMA947E UNSUPPORTED TP MONITOR

Explanation Supported TP monitors are CICS or Com-plete.

Action Enter CI, CO or BO.

SMA956R--> ENTER VOLSER OF PRODUCT TAPE

Action Enter the volume serial name of your SMA starter tape.

SMA958R--> ENTER 'VOLSER,START-TRACK' PUNCH DATASETS

Explanation The generated jobs need 2 workspaces.

Action Enter the volume serial name of a disk with at least 300 contiguous tracks of space.

SMA960R--> ENTER NAME (LLL.SSS) OF CICS LIBRARY

Explanation The generated jobs need the CICS library for invoking DFHEAP and assembling Natural CICS components.

Action Enter the name of the CICS library (for example PRD.BASE).

SMA961R--> ENTER NAME (LLL.SSS) OF COMPLETE LIBRARY

Action Enter the name of the Com-plete sublibrary. This library will be used for Com-plete macros and modules.

SMA963R--> ENTER NAME OF SAG PRODUCT LIBRARY

Explanation The Software AG (SAG) product library needs a label name.

Action Enter the label name (e.g., SAGLIB).

SMA964R--> ENTER VIRTUAL DEVICE ADDRESS (CUU) FOR TAPE

Action Enter the virtual device address to be used for reading the product tape (for example, 181).

SMA965R--> ENTER LIBRARY-NAME (LLL.SSS) FOR SLI BOOKS

Explanation During the installation of the Natural CICS components a member is copied into the SLI library and the power command * $$ SLI MEM=... is used.

Action Enter the name of the sublibrary for SLI books.

SMA970R--> ENTER UNIT-NUMBERS FOR 'SYSIPT, SYSPCH'

Explanation SYSIPT and SYSPCH will be reset at the end of the installation jobs.

Action Enter the unit numbers in the form aaa,bbb where aaa and bbb are hexadecimal numbers.

SMA971E INPUT MUST BE IN FORMAT 'HHH,HHH'

Explanation Two three digit hexadecimal numbers separated by a comma must be specified.

Action Supply input in the correct format.

SMA990I NOW GENERATING JOB jobname

Explanation The system informs you about the start of job generation. In parallel a protocol is printed containing the console dialog and each generated job.

Action None.

SMA991E INTERNAL ERROR DURING JCL-PREPARATION

Explanation Internal error. The installation procedure has abended.

Action Contact Software AG technical support.

SMA992E INTERNAL ERROR: UNEXPECTED ERROR FROM GETVIS

Explanation Internal error.

Action The installation procedure is abended with dump. Save the dump and contact Software AG technical support.

SMA995E INTERNAL ERROR DURING JOB SEGMENTATION

Explanation The punch output of this procedure is separated into several POWER jobs. The SEGMENT macro returned a code different from zero.

Action The installation procedure is abended with dump. Save the dump and contact Software AG technical support.

SMA999I ALL JOBS SUCCESSFULLY GENERATED

Explanation The system informs you about the end of job generation.

Action None.

Starter System for MVS

The following topics are covered below:

- General Considerations
- Preparation
- Libraries
- Job Generation
- Installing without TSO/ISPF

General Considerations

For a first-time installation under MVS/TSO, you need a Software AG SMA product tape containing:

- SMT*nnn*.TABS as first dataset
- delivery files for Adabas
- delivery files for Natural
- delivery files for the Natural TP Monitor interface
- delivery files for SMA
- library SMA*nnn*.CLST

Verify the tape contents using the Report of Tape Creation which accompanies the tape.

The Starter System CLIST requires TSO and ISPF. If these systems are not available at your site, refer to Installing without TSO/ISPF later in this section.

Preparation

Decide upon the TP monitor to be used as the target of the initial installation. The options are Com-plete, TSO, and CICS (version 1.7 or later).

This TP monitor must be installed before using the SMA Starter System. The SMA Starter System does not install Com-plete on its own, but it can install Adabas, Natural, and SMA under Com-plete.

Provide empty disk space for the database and the libraries; for the database see Database Space Considerations earlier in this section. For libraries approximately 45 megabytes (60 cylinders of a 3380 device) will be required.

Inspect your product tape for the dataset SMA*nnn*.CLST, and copy this dataset onto your disk, using a job like the following:

```
//... JOB ...
//SRCE EXEC PGM=IEBCOPY
//IN      DD DSN=SMAnnn.CLST,DISP=(OLD,PASS),
//           VOL=SER=Tmmmmm,UNIT=TAPE,LABEL=(?,SL)
//OUT     DD DSN=<hlq>.SMAnnn.CLST,DISP=(NEW,CATLG,DELETE),
//           VOL=SER=vvvvvv,UNIT=3380,
//           DCB=*.IN,
//           SPACE=(TRK,(5,5,10))
//SYSPRINT DD SYSOUT=*
//SYSIN   DD *
COPY INDD=IN,OUTDD=OUT
/*
//
```


Libraries

The SMA Starter System for MVS uses the following libraries:

- **<hlq>.SMA*nnn*.CLST**
  This is the source library for the SMA Starter System, which will not be changed during job generation or installation. It contains the CLIST as well as maps and input for the CLIST.
- **<JCL library>**
  The CLIST will write the generated jobs as well as a member containing the user's parameter values to this library. The library can have any name; if it does not exist during execution of the CLIST it will be allocated.
  If JCL generation using the CLIST is repeated for any reason, the same <JCL library> can be used (in this case, the previous parameter values are kept), or a new one can be used.
- **<Prodlib>.<DSN tape>**
  One of the parameters prompted by the CLIST is the high-level qualifier for product libraries. This value will be concatenated with the names of the product libraries from the tape to create the dataset name on disk for the copies of the product libraries. These libraries will be allocated by the generated jobs.
- **<Prodlib>.SAG.SMASRCE and <Prodlib>.SAG.SMALOAD**
  The same high level qualifier is used for work libraries which are used by the installation jobs to store the created source and load modules. These libraries are allocated by the Starter System.

Example:

If SAGLIB is used as a high-level qualifier the following libraries result:

SAGLIB.SMA*nnn*.SRCE	Source library unloaded from tape
SAGLIB.SMA.JOBS	Source library for jobs generated by the CLIST
SAGLIB.SAG.SMASRCE	Source library for members generated by the jobs from SAGLIB.SMA.JOBS
SAGLIB.SAG.SMALOAD	Load library for members generated by the jobs from SAGLIB.SMA.JOBS
SAGLIB.ADA*nnn*.SRCE	Product libraries copied from tape.
SAGLIB.ADA*nnn*.LOAD	
SAGLIB.NAT*nnn*.LOAD	

Job Generation

Perform the following steps:

Step 1: Enter Command Mode and Invoke the CLIST

Enter ISPF, TSO Command Mode. Invoke the CLIST MENU from the source library that you just copied:

EX '<hlq>.SMAnnn.CLST(MENU)'

- The CLIST requests the name of the source library from which it was called; re-enter <hlq>.SMA*nnn*.CLST. (This is necessary because in the CLIST language it is not possible to find out the library from which the CLIST was called.)
- The next screen asks you for the name of the job library. If the library does not exist, you must enter the allocation parameters in this screen.

Step 2: Environment Parameters

Choose "Function 1: Parameters for Adabas and Natural" from the Main Menu. This function allows you to enter Adabas, Natural and environment parameters. After entering your values you may leave the map with the END function, which is normally PF3.

- Adabas SVC number: Check whether the suggested value is a free SVC number in your system. If it is not, change this value accordingly.
- Database ID number: You should keep this value (001); but other numbers up to 254 are possible.
- Maximum number of files: Enter the expected maximum file number in your database. The installation will use the following file numbers:

File	Number
Adabas checkpoint file	1
Adabas example file employees	4
Adabas example file vehicles	5
Adabas example file miscellaneous	6
Natural system file FNAT	8
Natural system file FUSER	9
SMA system file	19

- MVS/XA or ESA: Enter "Y" if you are using MVS/XA or MVS/ESA; enter "N" if you are using an earlier MVS version.
- Permanent SVC: Enter "Y" if you want to install the Adabas SVC permanently.
- Temporary SVC: Enter "Y" if you want to install the Adabas SVC temporarily.
  Note:
  A temporarily installed SVC is valid immediately until the next system IPL, whereas a permanently installed SVC will only take effect after the next IPL of your operating system. Thus, you are recommended to perform both SVC installations at this point.

- Work unit volume serial number: This value will be used in all assembly and link steps for temporary work datasets.
- Install for CICS (Y/N): Enter "Y" if you want the install steps for Natural under CICS to be generated.
- Install for TSO (Y/N): Enter "Y" if you want the install steps for Natural under TSO to be generated.
- Install for Com-plete (Y/N): Enter "Y" if you want the install steps for Natural under Com-plete to be generated.
  Note:
  At least one of these TP monitors must be selected.
- Job Line1 to Line3: You may edit the standard JOB statement to be used in all generated jobs.
  You may use the variable §JNR in the name field of the job card. This variable will be expanded to a 4-character job ID (for example, I050, P010) corresponding to the member name of the generated job. Take care not to exceed the maximum length of the name field if you use this facility.

Step 3: Parameters for Dataset Allocation

Choose "Function 2: Parameters for Dataset Allocation" from the Main Menu. This function allows you to enter parameters for database allocation and product libraries.

- High-level qualifier for database files: The names of the files for the database will be concatenated using this value and standard extensions.
  Example: If you choose SAG.DB001, the seven files will be named:
  SAG.DB001.ASSOR1
  SAG.DB001.DATAR1
  SAG.DB001.WORKR1
  SAG.DB001.TEMPR1
  SAG.DB001.SORTR1
  SAG.DB001.PLOGR1
  SAG.DB001.PLOGR2
- High-level qualifiers for product libraries: see Libraries earlier in this section.
- Device/Primary Allocation/Volume: Specify the allocation parameters for the files of the database and for the product libraries. The sizes suggested on the screen are valid for 3350 and 3380 devices.
  Note:
  To check the values specified, the CLIST will allocate and deallocate the library files as soon as the sizes have been entered.

Step 4: Generate the Installation Jobs

Choose function 3 from the Main Menu. The installation jobs are now generated and written into the library that you specified.

Step 5: Execute the Installation Jobs

Exit the CLIST by entering "." (a period), and enter the TSO editor. Inspect the generated jobs and submit them in the order indicated by their numbers.

If you are installing Natural under TSO:

- Include the library ADA*nnn*.LOAD in the STEPLIB DD cards for the TSO procedures that you are using. This library was copied from tape to disk in the first generated installation job.
- The REGION size must be at least 2000KB.

If you are installing Natural under Com-plete:

- Follow the instructions given in section Natural under Com-plete in your Natural Operations documentation.

If you are installing Natural under CICS:

- Add the following definitions:
  ```
  DFHPPT TYPE=ENTRY,PROGRAM=NCnnnRE
  DFHPCT TYPE=ENTRY,PROGRAM=NCnnnRE,TRANSID=NAT2,TWASIZE=128
  DFHPPT TYPE=ENTRY,PROGRAM=NCnnnT1,RES=YES
                                (NCnnnT01 for NAT22)
  DFHPPT TYPE=ENTRY,PROGRAM=NCnnnT2,RES=YES
                                (NCnnnT02 for NAT22)
  DFHPPT TYPE=ENTRY,PROGRAM=NCnnnCB,RES=YES
  DFHPPT TYPE=ENTRY,PROGRAM=NCnnnBP,RES=YES
  DFHPPT TYPE=ENTRY,PROGRAM=ADABAS,RES=YES
  ```
  where *nnn* represents the Natural version which is being installed.
- Concatenate <prodlib>.SAG.SMALOAD to the STEPLIB of the CICS startup JCL.

Step 6: Invoke Natural

After successful execution of the generated jobs, Natural can be invoked.

If you are using TSO:

- Enter TSO command mode.
- EX '<Prodlib>.SAG.SMASRCE(Natural)'

If you are using CICS:

- Enter CICS.
- Enter the Natural transaction NAT2.
  Note:
  Job SMAI040 (the Adabas nucleus) must remain active during operation of Natural.

Within Natural, enter SMA via:

```
LOGON SYSSMA1
MENU
```

Installing without TSO/ISPF

If TSO/ISPF is not available at your site, the JCL generation Steps 1 to 5 are not applicable. You may proceed as follows:

1. Print member XDPARMS from the source library.
2. Modify the jobs SMAI*xxx* according to your requirements:
   1. Scan for & and replace the variables by your current parameter values.
   2. Scan for § and replace each § by an &.
      The printout of XDPARMS may help you in this process.
3. Submit the jobs SMAI*xxx* in numerical sequence indicated by the job names.

Starter System for BS2000

The following topics are covered below:

- Starter System Tape
- Installing the Starter System
- Information on the Initial Environment

Starter System Tape

The Starter System tape is available for customers who have no Adabas/Natural environment. The tape contains an Adabas database and an executable Natural system.

Note:
The product files of Adabas and Natural are not part of the Starter System. These files are contained on the product delivery tape.

The Starter System tape contains the following files (see also the archive report delivered with the tape):

File	Contents
ADA100.ASSO	Database file
ADA100.DATA	Database file
ADA100.WORK	Database file
ADA100.TEMP	Database file
DEMO.E.STARTADA	Job which starts the Adabas nucleus
DEMO.ADALNK.PARMS	ADALNK parameters
DEMO.P.STARTNRT	Procedure which starts TIAM Natural
DEMO.NRTPHSE	TIAM Natural phase
DEMO.NATPHSE	Batch Natural phase
DEMO.ADA*nnn*.MOD	Adabas module library
DEMO.NAT*nnn*.MOD	Natural module library
DEMO.ENVMOD	Module library containing the reentrant part of Natural
DEMO.E.STARTCMP	Job which starts Natural common memory pools
DEMO.E.JCLGEN	Job to generate installation JCL using SMA
DEMO.P.TABLOAD	Procedure to load SMA tables into SMA
DEMO.JOBLIB	LMS library containing all jobs which were used to install this environment

Installing the Starter System

1. Allocate disk space for the database.
   For the Starter System, disk space of approximately 70.000 PAM pages is required. Usually, the database files are allocated on private disks. Use the following statements for allocating disk space:

   ```
   /FILE ADA100.ASSO,SPACE=5376 ,VOL=......,BLKSIZE=(STD,1),DEV=......
   /FILE ADA100.DATA,SPACE=26112,VOL=......,BLKSIZE=(STD,2),DEV=......
   /FILE ADA100.WORK,SPACE=1920 ,VOL=......,BLKSIZE=(STD,2),DEV=......
   /FILE ADA100.SORT,SPACE=1536 ,VOL=......,BLKSIZE=(STD,2),DEV=......
   /FILE ADA100.TEMP,SPACE=1536 ,VOL=......,BLKSIZE=(STD,2),DEV=......
   ```

2. Copy the files from tape to disk.
   The Starter System tape was created by ARCHIVE. To copy the tape contents to disk proceed as follows:

   ```
   /EXEC $ARCHIVE
   FILES NAME=($SMAGEN.ADA100.)
   FILES NAME=($SMAGEN.DEMO.)
   IMPORT DEVICE=dev,FROM=(SSSnnn)
   END
   ```

3. Start the Adabas nucleus and TIAM Natural.

   ```
   /E DEMO.E.STARTADA
   /DO DEMO.P.STARTNRT
   ```

Information on the Initial Environment

The Adabas/Natural system you copied from tape to disk also contains an operable System Maintenance Aid version. You can use this SMA for information on the parameter settings of the initial environment:

- Logon to the Natural application SYSSMA1.
- Enter MENU.
- Choose option R (for Reports).
- Select report E (for environment DB100).

Using SMA in Batch Mode

All System Maintenance Aid (SMA) direct commands (see section Direct Commands) are valid in batch mode. Batch execution may be useful when tapes or work files are used, or when large reports are printed.

The most important and useful commands for working with SMA in batch mode are MODIFY PARAMETER, INSTALL and GENERATE.

The JCL generator writes the generated JCL into the SMA database. When SMA is used in batch mode, the same JCL is also written into work file 2, so that it can be kept in normal operating system files.

In order to use SMA in batch mode, the user must start a batch Natural with the following CMSYNIN input:

```
LOGON SYSSMA1
MENU
<command> <value(s) for this command>
...         possible further commands
FIN
```

Each command and its values must be written in one line. Command and/or parameters may be separated by blank or comma.

In a sequence of commands, the GENERATE command must be the last command (see the example below).

Example Batch Input:

The following example shows a complete sequence of commands that can be used to install all products from an Software AG delivery tape.

Input to batch Natural CMSYNIN:

```
        LOGON SYSSMA1
(1)     MENU
(2)     LOAD
(3)     SET ENV OS/MVS
        MODIFY PARAMETER LIB-GROUP SAGLIB
        MODIFY PARAMETER LIB-GROUP-UNIT 3380
        MODIFY PARAMETER LIB-GROUP-VOL SAGDSK
        SET-INSTALLED OS/MVS
(4)     COPY ENVIRONMENT OS/MVS PDEV Application Program
(5)     INSTALL ALL
        MODIFY PARAMETER SVC 249
        MODIFY PARAMETER DBID 25
(6)     DELETE JOBS
        GENERATE
        FIN
```

Explanation:

1. The SMA batch command processor is called.
2. Control information is loaded into SMA. This command requires that Natural work file 1 be assigned to the first dataset on an SMA product delivery tape.
3. The LIB-GROUP parameters are set to local standards in the default environment, and these parameter changes are committed immediately.
4. The default environment OS/MVS is copied to the new customer environment named PDEV. This new environment will be the environment for all subsequent commands.
5. All products known to SMA are marked as "to be installed", and two environment parameters are set.
6. JCL generation is called. Stored jobs of previous executions are deleted to ensure that generation will be running.

BS2000 Installation Job Conventions

The following is an example of a job generated under BS2000. Some parts of the installation jobs are similar in all jobs generated:

```
/.I055   LOGON ,TIME=20000
/SKIP .NOP000     "<J-INIT SMT V111.21>       "                          (01)
=========================================================================
 JOB NAME : E.I055  NAT234.JOBLIB                                        (02)
           JOB E.I055: ASS. BATCH NAT.
=========================================================================
/.NOP000   SYSFILE SYSOUT=L.I055.100
/          STA   "=JOB I055 GENERATED AT 1999/10/21 16:36:30="          (03)
/          REMARK  FOR ENVIRONMENT : NAT231
/          PASSWORD X'00000000'                                         (04)
/ REMARK   SKIP   .START    "BYPASS RESTART ROUTINE IN JOB + PROCEDURES"
/          SETSW   ON=13    "IF OFF=13 CENTR.PROC. IGNORE RESTART ROUT."
/          DCLJV   SMAJV
/          SETJV  (SMAJV,63)    ,C'NAT231'
/          GETJV  (SMAJV)
/          DCLJV   #TMPJV.SMA
/          SETJV   #TMPJV.SMA       ,C'I055     '
/         SKIPJV (((SMAJV,5,4)<>(#TMPJV.SMA,1,4))                       -
/              OR ((SMAJV,24,08)= C'         ')  )                      - (05)
/                 ,LABEL=.NEWSTART "EXISTS A RESTARTPOINT FOR THIS JOB?"
/          SETJV   #TMPJV.SMA       ,(SMAJV,24,8)
/          SKIPJV (SMAJV,10,7)=C'NORMEND'                               -
/                 ,LABEL=.NEWSTART "AFTER JOBNORMEND:PERFORM NEWSTART"
/          CALL    NAT234.JOBLIB(P.REPORT)                              -
/                 ,TEXT='ÜÜ RESTART OF JOB',STEP='I055'
/          SKIP   .&(#TMPJV.SMA)   "PERFORM RESTART OF THIS JOB :"
/.NEWSTART SETJV  (SMAJV,01,09) ,C'JOB I055'
/          SETJV  (SMAJV,10,32)                                         -
/                 ,C'RESTART/ STEP NEWSTART                          / '
/          SETJV  (SMAJV,42,12) ,$SYSJV.DATE
/          SETJV  (SMAJV,54,09) ,$SYSJV.TIME
/          SETJV  (SMAJV,63)    ,C'NAT231'
/  .START  CALL    NAT234.JOBLIB(P.REPORT)                              - (06)
/                 ,TEXT='=========================================='-
/                 ,STEP='I055 START'
/.STEP0220 REMARK *** I055/NUT234 ***
/.ABS2STUU  CALL   NAT234.JOBLIB(P.ASSEMBLE)                            - (07)
/                 ,SOURCE=ABS2STUU                                     -
/                 ,SRCLIB=NAT234.JOBLIB                                -
/                 ,ALTLIB=$SAG.NAT234.MAC                              -
/                 ,OUTMOD=NAT234.JOBLIB                                -
/                 ,STEP='ABS2STUU' "<UNI SMT V111.21>          "
/.STEP0221 REMARK *** I055/NUT234 ***
/.ANATSWP  CALL   NAT234.JOBLIB(P.ASSEMBLE)                             -
/                 ,SOURCE=ANATSWP                                      -
/                 ,SRCLIB=NAT234.JOBLIB                                -
/                 ,ALTLIB=$SAG.NAT234.MAC                              -
/                 ,OUTMOD=NAT234.JOBLIB                                -
/                 ,STEP='ANATSWP' "<UNI SMT V111.21>          "
/.NORMEND  REMARK  NORMAL JOB END <J-END SMT V111.21>                   (08)
/          SKIP   .NOJV,OFF=13 "RESTARTROUTINE SWITCHED OFF AT JOBSTART"
/          SETJV   (SMAJV,1,09)                                         - (09)
/                 ,C'JOB I055     '
/          SETJV   (SMAJV,10,8)                                         -
/                 ,C'NORMEND/'
```



```
/    .NOJV CALL    NAT234.JOBLIB(P.REPORT)                              - (10)
/                 ,TEXT='OK NORMEND',STEP='I055'
/          REMARK  =====JOB I055 NORMALLY TERMINATED======
/          SYSFILE SYSLST=(PRIMARY)
/          SYSFILE SYSOUT=(PRIMARY)
/          CALL    NAT234.JOBLIB(P.REPSTORE)                            - (11)
/                 ,REPORT=L.I055.100
/          SKIP   .LOGOFF
/.ABEND    STEP   "*****JOB I055 ABNORMAL TERMINATION*****"              (12)
/          CALL    NAT234.JOBLIB(P.REPORT)                              - (13)
/      ,TEXT='** JOB ABEND, SEE FILE L.I055.100 **'                     -
/                 ,STEP='I055 ABEND'
/          GETJV   (SMAJV)
/.LOGOFF   LOGOFF  NOSPOOL "=====END OF JOB I055==========="            (14)
```

Explanations:

1. The first lines of this job were created by JCL skeleton J-INIT; the creation date of this skeleton is shown.
2. All installation job names begin with E.<jobname>. SYSOUT messages are written to file L.<jobname>.
3. This job was created on 05/25/1991 at the customer's site.
4. There is a /PASSWORD command in each job. You can modify this password using the parameter JOBPASS (parameter group BASIC). Its default value is x'0000 0000'.
5. These lines establish the automatic restart routine of the jobs. If, for example, step .ANATPARM terminated normally but step .NATBS2B ended abnormally, you can enter the job again, and it will skip to .NATBS2B and continue processing with this step.
6. Procedure P.REPORT will write one line to file L.REPORT and note the date and time of the job start.
7. The "central" procedure P.ASSEMBLE is called. It will assemble the source ANATPARM in library $SMAGEN.E1 using the macro library $FRZ.NAT216.MAC. The assembled module will be written to library $SMAGEN.E1.
   The normal end of job step "I055 ANATPARM" will be noted in file L.REPORT.
   If you wish to modify the JCL of this part of the job, refer to JCL skeleton UNI in SMA.
8. The last part of the installation jobs is created by JCL skeleton J-END.
9. The job variable SMAJV, which controls the restart routine, is reset.
10. P.REPORT notes the normal end of the job in file L.REPORT.
11. If a job ended normally its SYSOUT message file will be stored in a library. In this case, P.REPSTORE will store file L.I055 in library $SMAGEN.LIB.REP.
12. If any JCL error or/and assembly error occurred in P.ASSEMBLE, the .ABEND step of a job will be performed.
13. P.REPORT notes the abnormal end of the job in file L.REPORT.
14. The jobs end with /LOGOFF NOSPOOL.

Reserved Keywords

Reserved keywords are determined/recognized by their mandatory length. For example, the keyword PRODUCT has a mandatory length of four, therefore an abbreviation of this word with a length less than four characters is not recognized as a reserved keyword.

Do not use any of the following keywords as names (e.g. as an environment name):

Length	Keyword
2	++
2	--
1	A
3	ADD
3	ADMINISTRATION
1	BOTTOM
3	CANCEL
2	CHANGE
2	CO
4	COMBINE
4	COMMIT
3	COP
4	COPY
6	COPY-DEVICE
6	COPY-HLQ
6	COPY-UNIT
6	COPY-VOLSER
3	CORRECTIONS
2	DATASETS
2	DELETE
2	DISPLAY
2	DOWN
2	DX-Y
1	E
3	ENV
7	ENVIRON
	# ENVIRONMENT
	# ENVIRONMENTS
2	EXIT

Length	Keyword
2	FIX
3	FOR
2	GENERATE
3	GLOBAL
4	HELLO
4	HELP
2	INSTALL
2	JCL
2	JOBS
3	LANGUAGE
2	LIB-GROUP
4	LOAD
5	LOADVOLSER
2	MENU
2	MODIFY
4	NAMED
3	NATURAL
2	PA
3	PAR
4	PARAMETER
4	PARM
3	PINSTALL
5	PRINT
7	PRINT-ID
7	PRINT-SIZE
	PRO
4	PRODUCT
4	PROFILE
2	PUSAGE
1	QUIT
1	R
3	REPORT
3	RESOURCES
2	SA
	SAV

Length	Keyword
4	SAVE
5	SAVED
2	SCAN
3	SET
5	SET-APPLIED
5	SET-COPIED
5	SET-INSTALLED
6	SHOW-JCL
6	SHOW-OIP
5	SHOWDATA
2	SKELETON
2	STOP
2	SUBMIT
1	T
2	TA
4	TABLOAD
6	TABS-ENVIRONMENT
6	TABS-FINISH
6	TABS-GENERATED
7	TABS-JCL
7	TABS-JOBS
8	TABS-PPVALUES
8	TABS-PRPARMS
6	TABS-SAVED-JOBS
6	TABS-TAPES
6	TABS-ZAPS
3	TAP
4	TAPE
5	TAPES
3	TO-BE-COPIED
3	TOP
4	TRACE
4	UNINSTALL
3	UNLOAD
2	UP

Length	Keyword
8	USEREXIT
1	VOLSER
1	Z
2	ZA
3	ZAP
5	ZAP-APPLIED
7	ZAP-LIBS
7	ZAP-LIST
4	ZAPS

